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# Food Import Demand of Eight OPEC Countries



FOOD IMPORT DEMAND OF EIGHT OPEC COUNTRIES by James R. Coyle, Mary E. Burfisher, John B. Parker, Herbert H. Steiner, Ahmed Abou-Bakr, Arthur J. Dommen, and Michael E. Kurtzig. Africa and Middle East Branch, International Economics Division, Economic Research Service, U.S. Department of Agriculture. Foreign Agricultural Economic Report No. 182.

## Abstract

The United States is making a poor showing, compared to other exporters, in the food and agricultural markets of the North African and Middle East members of the Organization of Petroleum Exporting Countries (OPEC). The U.S. share of world exports to these eight countries dropped from more than 22 percent in 1974 to less than 6 percent in 1982. Demand for food has grown rapidly in these countries, as a result both of population growth and of rapidly increased incomes due to their oil production revenues and the investment of the enormous wealth created by these revenues. Only about half of their total food supply comes from domestic production. Imports' share of the food supply is expected to increase significantly in the eighties.

## Note

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## Foreword

The eight North Africa and Middle East OPEC countries have been a rapidly growing market for agricultural and food products during the past decade. The United States has been less successful in capturing this market growth than its competitors, especially the countries of the European Community. Nevertheless, there exists significant market development potential in the eighties. Realizing this potential requires information on the countries, the forces shaping their import demand, and the institutions and policies which will affect exporters. This study presents such information, along with projections of import demand for a wide range of commodities. This study may help to fill an information vacuum, and make it easier for U.S. exporters, other government agencies, and researchers in both the public and private sectors to understand this important, and changing, region.

Ahmed Abou-Bakr and Mary Burfisher, economists, wrote portions of chapters 2 and 3. Sections of these chapters dealing with individual countries were written by country analysts Herb Steiner (Algeria and Libya), John Parker (Saudi Arabia, UAE, Qatar, Kuwait, Iraq, and Iran), and Michael E. Kurtzig (Iran). Assistance was provided by Judy Landsburg.

James Coyle, economist, was responsible for collecting, evaluating, and tabulating data (see appendix I), evolving the methodology, carrying out the projections, and writing chapters 4 through 7. In these tasks, he was assisted by Randee Gibbons, Lorrie Hill, Jerome Iverson, Eric Mischel, David Skully, Veronica Ward, and Gordon Zook, statistical assistants. Computing assistance was provided by David Stallings, Edward Overton, and Samuel Calhoun, IED. Econometric criticism was provided by William Kost and Shahla Shapouri, IED; Randolph Barker and David Blandford, Cornell University; and an anonymous reviewer.

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## Highlights

The United States, compared to other exporters, is making a poor showing in the agricultural markets of the North Africa and Middle East OPEC countries. While the U.S. share of the total market in 1974 was more than 22 percent, it dropped to less than 6 percent in 1982. If the United States had maintained its 1974 share of the market, its exports to the region would have reached \$4.3 billion in 1981 instead of the actual sales of \$1.3 billion. The European Community's share increased from 18 percent to over 25 percent in the 1974-81 period.

This Economic Research Service study explores the North Africa and Middle East OPEC market, giving facts and projections for nearly 80 commodities. Likely exporting countries are identified.

The United States needs to reach beyond two of its exporting habits which are, according to this study, a concentration of its export efforts on only a few country markets and a few bulk commodities. Over half of U.S. exports go to Western Europe and Japan (relatively stagnant markets) and the Soviet Union and China (volatile markets). The North Africa and Middle East OPEC region represents a

fast-growing alternative, with food imports rising from only \$2 billion in 1973 to over \$18 billion in 1981. The U.S. emphasis on bulk commodities such as grains and oilseeds may detract American interest from the rapidly growing and now dominant export class on the world agricultural market: high-value products such as fresh fruits and canned vegetables. The North Africa and Middle East OPEC countries are a ready market for such products.

Only about half of the region's total food supply is from domestically produced products. Iran, Iraq, and Algeria have large agricultural sectors, but even these countries depend heavily on imports. Projected domestic production increases will only slow the inflow of imports. Imports' share of total supply is expected to increase significantly over the decade. Even expected increases in meat production will outpace demand in only a few areas. Most of the increases in demand caused by growing population, income growth, and the diversification of tastes will be met by imports.

### Grains

Grains will remain the major agricultural import for all the countries throughout the decade. Imports of wheat and rice are expected to reach 11,066,000 tons and 2,820,000 tons, respectively, by 1990. Feed grain imports will grow faster because of increasing emphasis on domestic livestock feeding. Algeria, Saudi Arabia, Iraq, and Iran can become sizable feed grain importers if they continue current programs. Feed grain imports in 1990 are expected to reach 5.5 million tons of corn, 3.4 million tons of barley, and nearly 1 million tons of sorghum.

### Livestock

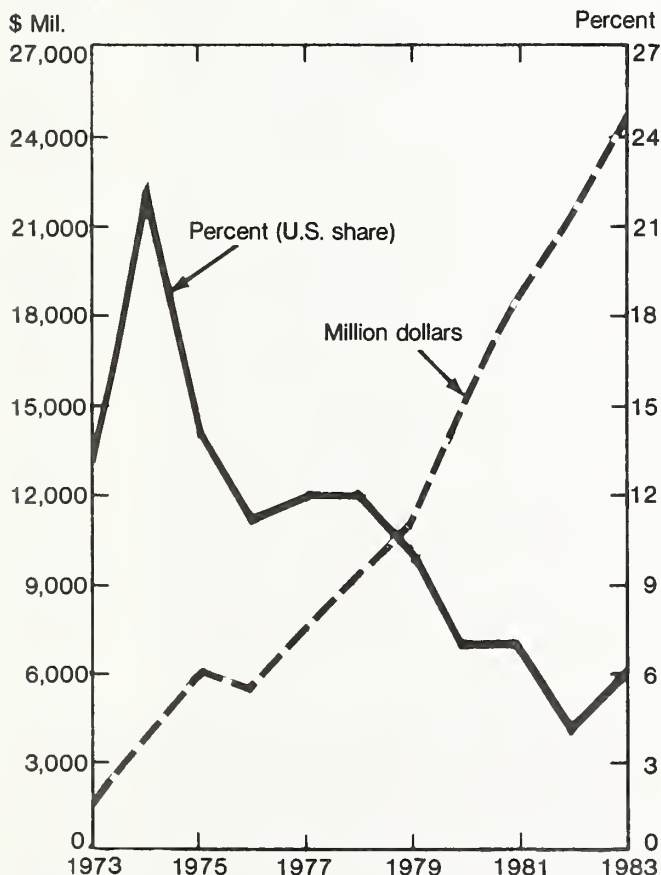
Saudi Arabia is one of the world's top importers of frozen poultry, live sheep, mutton, milk, and cheese. Algeria is a major importer of milk and eggs. Iran imports tremendous amounts of live sheep, butter, and cheese. Even with these high imports, however, consumption is still relatively low by developed country standards and demand is very high. Imports can be expected to continue growing rapidly, especially in Algeria, Libya, Iraq, Iran, and, to a lesser degree, Saudi Arabia. Dairy product imports should see the most rapid growth, with meat imports, especially poultry and beef, close behind.

### Oilseed Products

Oilseed product imports, although not oilseeds, will grow rapidly. Most of the countries import small amounts of oilseed meal, but nowhere near enough for a properly mixed ration for livestock feeding. As feeding techniques improve and feed imports rise, much more meal will be needed. Algeria, Saudi Arabia, Iraq, and Iran will be major importers by the end of the decade, with little likelihood they will substitute oilseed imports and do their own crushing. The region's imports of meal are projected to exceed 3 million tons by 1990.

Iran is one of the world's largest importers of soybean oil and Algeria is one of the largest importers of sunflower and rapeseed oil. Imports are expected to grow rapidly

**Agricultural Imports of Eight OPEC Countries and U.S. Share**



Source: Table 6

since consumption in most of the countries is still low and shortages of oil are common. Also, some changes in oil types are expected and can be further encouraged through market promotion. Algeria has expressed interest in importing soybean oil rather than rapeseed oil. Saudi Arabia will likely import more corn oil at the expense of palm oil. Total imports of cooking oils by the region are projected to be at 1.9 million tons in 1990.

### High-Value Products

The United States has had little involvement in the high-growth, high-value product market. For some commod-

ities, such as sugar, tea, coffee, or fresh vegetables, the United States is not a logical supplier, even though the demand exists. But imports of fresh fruit, including apples and citrus, are expected to grow as are imports of tobacco and cigarettes (which constitute large markets for the United States). Canned goods, fruit juices, and even bakery products enjoy large and growing markets in Saudi Arabia and the Gulf countries, and Iraq is expected to become a major importer. Algeria and Iran show large potential for select canned goods, such as tomato paste. Only for soft drinks are imports by the region expected to decline as local production rises.

## Glossary of Abbreviations

EC	European Economic Community
FAO	Food and Agriculture Organization of the United Nations
IGB	Iraq Grain Board
IMF	International Monetary Fund
KPC	Kuwait Petroleum Corporation
KSC	Kuwait Supply Company
OAIC	Office Algérien Interprofessionnel des Céréales
OFLA	Office des Fruits et Légumes d'Algérie
ONAB	Office National des Aliments du Bétail (Algeria)
ONACO	Office National Algérien de Commercialisation
OPEC	Organization of Petroleum Exporting Countries
SAMA	Saudi Arabian Monetary Agency
SNEMA	Société Nationale des Eaux Minérales Algériennes
SN SEMPAC	Société Nationale de Semouleries, Meuneries, Fabriques de Pâtes Alimentaires, et Couscous (Algeria)
SNTA	Société Nationale des Tabacs et Alumettes (Algeria)
SOGEDIA	Société de Gestion et de Développement des Industries Alimentaires (Algeria)
SONATRACH	Société Nationale pour le Transport et la Commercialisation des Hydrocarbures (Algeria)
UAE	United Arab Emirates

## Units of Measure

bcf	billion cubic feet
bcf/d	billion cubic feet per day
cif	cost, insurance, freight
FY	fiscal year
ha	hectare
kg	kilogram
km	kilometer
mb/d	thousand barrels per day
mmb/d	million barrels per day
mcf/d	thousand cubic feet per day
mmcf/d	million cubic feet per day
mm	millimeter
mcm	million cubic meters
tcf	trillion cubic feet

Note: The ton unit refers to metric tons unless otherwise specified.

# Chapter 1—Introduction

The OPEC (Organization of Petroleum Exporting Countries) countries of North Africa and the Middle East are the world's major suppliers of petroleum. In 1981, 31 percent of total world crude oil was produced in these eight countries (Algeria, Libya, Saudi Arabia, the United Arab Emirates—UAE, Qatar, Kuwait, Iraq, and Iran). The economies of Western Europe, Japan, and the United States depend in varying degrees on the continuing supply of these oil exports. The American interest in these eight countries also extends to what they purchase with their oil revenues. This report emphasizes that the eight countries themselves represent a sizable and profitable market for the U.S. agricultural harvest, a market not yet fully exploited by U.S. exporters.

Detailed information on the North Africa and Middle East OPEC market is presented here. A major problem for U.S. exporters is a lack of information on the present size and organization of this market and its potential. This study seeks to fill this information gap, providing detailed facts on a commodity-by-commodity basis. Nearly 80 commodities traded in the region are discussed, and projections of their trade are made for each of the eight countries. These include the major grains, livestock products, oilseed products, and high-value goods. This study identifies likely suppliers and the reasons for their involvement in the market.

Aggregate 1981 imports of these eight countries were valued at about \$106 billion, compared to \$6 billion 10 years earlier. The region has become fully integrated into the world financial system, advancing from the periphery of world commerce to a vital trading center.

Agricultural products are a significant part of the region's imports, valued at over \$18 billion in 1981, up from only \$2 billion in 1973. Saudi Arabia has become the largest importer in the region, with agricultural imports valued at nearly \$6 billion in 1981. Iran and Algeria each imported over \$3 billion in the same year. Only Qatar, with fewer than 300,000 people, imported less than \$1 billion in agricultural products in 1981.

The first substantial increases in petroleum product prices in 1973, which caused such a shock in the industrialized countries, allowed the North Africa and Middle East OPEC countries to institute a system of food price subsidies using imported food. These subsidies encouraged consumption and led to much better diets. These programs, and food imports in general, now use such a small part of overall revenue, however, that food imports will continue

to grow, even if earnings stagnate by reason of a slack world petroleum market.

Diets are changing in these countries as the people become aware of the wide selection of foods available. This process is well advanced in Saudi Arabia and the Gulf countries, all of which import large quantities of high-value products. Consumption is only beginning in the other countries, however, as even meats, dairy products, and fresh fruit are not yet widely available.

The countries import nearly every agricultural product, with the notable exception of pork. Grains make up the largest part of the imports since wheat and rice are the diet staples. Feed grain imports have also been increasing rapidly in all of the countries as livestock feeding has become more common. Imports of livestock products and cooking oils are also high, being valued at \$4.2 billion and over \$800 million, respectively, in 1981. Oilseed meal imports, though small by world standards, have been showing rapid growth as livestock feeding has increased. These countries have become leading importers of high-value agricultural products, including fresh fruits and vegetables and highly processed products. Value of these imports reached an estimated \$6 billion in 1981.

The United States is an important supplier to this region, exporting agricultural products valued at nearly \$1.3 billion in 1981. Algeria is one of the largest markets for U.S. durum and pulse exports. Iraq is one of the largest markets for U.S. poultry and eggs. Saudi Arabia is one of the largest markets for U.S. meats, wheat flour, rice, beverages, and cigarettes.

The United States had less than 6 percent of the market in North Africa and the Middle East in 1982 and that was then valued at over \$21 billion. U.S. exports to the area have grown in the last decade, but at a rate much slower than the overall growth of the market. The U.S. share of this market was over 22 percent in 1974. If the U.S. market share had remained at this level, U.S. exports in 1982 would have been \$3.5 billion *more* than they actually were.

Reasons for the relatively poor U.S. performance in the region are many. Political troubles, especially in relations with Iran and Libya, have certainly hurt U.S. sales. The U.S. Department of Agriculture has not provided adequate information on the size of the market and what needs to be done to deal there; until 1983 there was no U.S. agricultural attaché stationed in any of the eight countries. Also, legislation which penalizes U.S. firms for signing documents appearing to abet the Arab boycott of Israel has



discouraged market exploration necessary to increase U.S. exports. U.S. sales to the region have further suffered because importers have become dissatisfied with the poor quality of some U.S. products. And U.S. products are not always competitively priced.

The pattern of U.S. farm exports—a concentration on a few large markets and a few bulk commodities—may detract American exporters from the fast-growing OPEC market. Western Europe is the largest U.S. market, valued at nearly \$12 billion in 1981, of which the European Community (EC) imported nearly \$9 billion. Japan purchased \$6.7 billion of U.S. agricultural products in 1981. The Soviet Union and China imported \$2.4 billion and \$1.8 billion, respectively. These few countries account for over half of U.S. agricultural exports. Western Europe and Japan are relatively stagnant markets and the Soviet Union and China are volatile markets. Although these markets will help eliminate some of the current U.S. agricultural surplus, other fast-growing markets are also needed. North Africa and the Middle East are logical possibilities.

The United States has also stressed the exports of only a few commodities. In fiscal year 1981, grains, oilseeds, and their products accounted for over 70 percent of U.S. agricultural exports. The United States clearly dominates world trade in bulk commodities, but world trade is no longer dominated by the bulk items. Trade in high-value agricultural products, including processed foods, has grown to 55 percent of total world agricultural trade, while bulk trade has fallen to 45 percent of the total. This high-value trade continues to increase much more rapidly than bulk trade and is an opportunity area for U.S. exports. Western Europe, the United States, Japan, and Canada account for over two-thirds of world imports of high-value products. While imports of such products by these countries are rising, their share of the world total is falling. The North Africa and Middle East OPEC region increased its share of the high-value trade from 3 percent in 1970 to

over 10 percent in 1980, making it one of the fastest growing markets for these products. Saudi Arabia has become the world's fifth largest importer of high-value agricultural products, with 1980 imports valued at nearly \$3 billion. In many of the OPEC countries, these imports account for over half the value of total agricultural imports. These high-value imports are growing much faster than bulk items in all the study countries.

In this study, projections of import demand for 1985 and 1990 were made for a list of commodities and products where such demand was found to be significant in any one of the eight study countries. The commodities and products covered were the following:

- *Grains.* \* Wheat, rice, barley, corn, other coarse grains, and flour. (Asterisk indicates estimation using econometric techniques.)
- *Livestock and Livestock Products.* Live cattle,\* live sheep,\* live poultry, fresh and frozen beef and veal,\* fresh and frozen lamb and mutton,\* other meats, preserved and prepared meats, poultry meat, eggs, fresh milk, cheese, butter, and nonfresh milk.
- *Oilseeds and Oilseed Products.* Peanuts, soybeans, cottonseeds, sunflower, sesame, rapeseed, coconut, safflower, flaxseed, other seeds, soybean oil,\* cottonseed oil, peanut oil, olive oil, sunflower oil,\* rapeseed oil, safflower oil, sesame oil, linseed oil, palm oil,\* coconut oil, corn oil, other oil, and 24 vegetable oil residuals.
- *High-Value Agricultural Products.* Citrus fruits,\* non-citrus fresh fruit,\* dried fruit, canned fruit,\* fruit juice,\* other fruit preparations, prepared nuts, fresh vegetables, frozen vegetables, beans and pulses,\* prepared vegetable products,\* sugar and related products,\* coffee,\* cocoa, chocolate,\* tea,\* spices, margarine, prepared cereals, macaroni, bakery products, other cereal preparations, other beverages,\* and tobacco products.\*

## Chapter 2—Region and Country Backgrounds

The eight OPEC countries in North Africa and the Middle East are similar in that their revenues from oil exports make them a ready market for imports from the developed countries, particularly from the United States. Since their own agricultural resources are severely constrained by natural conditions, these countries constitute a market for imports of agricultural products.

The eight countries are bound by OPEC's decisions with regard to the volume and prices of their oil exports.<sup>1</sup> Conversely, their future import demand for agricultural products is closely tied up with the accumulation of wealth derived from their oil revenues and the investment of these revenues. Therefore, the market that they constitute as a whole greatly depends on the fate of OPEC as an oil marketing cartel.

Beyond their membership in OPEC, these countries have other similarities which justify their treatment as a distinct market for agricultural products, and particularly food products. All consider themselves to be members of the Arab world, with the exception of Iran. They share the Arabic language (again, with the exception of Iran, whose major language is Farsi). They are all Moslem countries, although the practice of Islam varies somewhat from country to country. Religion tends to endow their governments with a common political outlook, although dissimilarities, and even conflicts, exist within this community.

### Economic Resources of the Region

The estimated 1982 population of the eight countries was almost 92 million. Populations of individual countries of the region vary widely, from over 40 million in Iran to less than a quarter million in Qatar (table 1). Population growth rates generally exceed 3 percent per year. Between 17 and 21 percent of the population are nomadic tribes (a conservative estimate made in absence of reliable statistics by officials of the Arab Authority for Agricultural Investment and Development). Literacy rates are low, ranging from 15 to 25 percent in Saudi Arabia to 60 percent in Kuwait.

The sharp increases in oil prices of 1973-74 and 1979-80 provided these countries with large financial resources to

expand development programs. But absorption of these revenues has been slowed by lack of infrastructure (machinery parts, roads, ports, communication systems) and especially by an acute shortage of labor at every skill level. This shortage has generated large-scale migration of labor into the region.

There were nearly 5 million immigrant workers in these countries in 1980. These workers represented 6.5 percent of the total population and 20 percent of the total labor force, much higher proportions than experienced in Western and Northern Europe. Qatar, Kuwait, the UAE, Saudi Arabia, and Libya depend heavily on foreign labor. This is due mainly to their small indigenous populations, low labor force participation rates (especially for women), and lack of an adequate education/training system.

### Agriculture

Only three of the eight countries have large agricultural sectors (over 5 million ha of cultivated land)—Algeria, Iraq, and Iran. Cropping and livestock herding there employ a significant portion of the population, and the degree of food self-sufficiency is higher than in the others. Conversely, because of the larger populations, the income per capita is lower. Algeria has a flourishing agricultural sector along the Mediterranean coast; as one goes south, agriculture and herding give way to the desert wastes of the Sahara. Iraq's agriculture thrives along the Tigris and Euphrates river valleys, with herding in the highlands. Much of Iran's arable land in the interior is cultivated, although there are large areas of desert as well. The desert prevails in the other five countries (Libya, Saudi Arabia, the UAE, Qatar, and Kuwait). Agriculture is limited to relatively small areas, although even in desert oases such crops as dates and barley are harvested. Oil wealth has permitted extension of irrigation into the desert in Libya and the Gulf states. Such irrigation constitutes high-cost production, however, and, at least in the case of Libya, depends on the exploitation of irreplaceable fossil water reserves.

Tremendous growth in oil revenues has brought substantial change to agriculture in each country. Oil wealth has generated increased investment to improve agricultural productivity and diversify agricultural production. This investment has significantly increased food production, particularly of meat and fresh vegetables. However, production falls far short of the region's booming food demand.

There are several reasons for the region's attention to agricultural development. One is the increasing dependence

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<sup>1</sup>Officially, at least. Beginning in 1981, some of the eight countries chose to ignore ceilings on their production imposed by OPEC in an attempt to maintain prices in a slack market. Iran made no effort to conceal the fact in late 1982 that it was producing at twice the level imposed by OPEC in order to finance its war with Iraq. Price discounting had also become a common practice by late 1982.



on food imports as high incomes boost food demand. The extent to which each country plans to achieve food self-sufficiency and the timeframe for its achievement vary. But, even with heavy investments, self-sufficiency is unlikely to be achieved soon in any of the countries.

Another reason for emphasis on agricultural development is the continued dependence of a large segment of the populations of Algeria, Iran, Iraq, and Libya on agriculture for a livelihood. Agricultural development is viewed in these countries as a means of distributing national wealth to the remaining rural population in order to increase social equity and reduce rural-urban migration.

There is also a long-term objective to develop diversified economies before petroleum revenues run out. These plans include strengthening the agricultural sectors and developing light industries such as food processing.

Finally, consumer preference for fresh fruits and vegetables, particularly in the Gulf states, has stimulated local production of these items.

Livestock has been the biggest growth area in food production in the region. Broiler and egg production have shown the greatest increases, followed by sheep, cattle, and milk production. Vegetable production has expanded enough to make the region seasonally self-sufficient. There has been some expansion in feed grain production to meet increased local demand. The processed food industry is still not well developed, except for soft drink beverages in the desert countries and the expansion of flour milling capacities throughout the region.

## Finance

Financial data on the eight economies vary greatly in quantity and quality. Algeria has a long history of compiling gross national product data under the French. But, in many of the other countries, accurate accounting of pro-

duction and consumption, and even of the government revenues and spending, has been a recent phenomenon associated with the need of governments to allocate budgets and control inflation.

Per capita gross domestic product (GDP) figures for the countries of the region include some of the highest in the world (UAE, Qatar, Kuwait), and divide rather markedly into two groups—one group ranging from \$7,000 to \$31,000 and the second (comprising Algeria, Iraq, and Iran) clustered in the vicinity of \$2,500 (table 2).

Oil production has formed the basis of the wealth of the region for many years. The eight countries account for 31 percent of the world's oil production.<sup>2</sup> Oil production has fluctuated somewhat (table 3).

Income from oil exports (table 4) produced foreign exchange reserves totalling \$364.5 billion for the region by early 1982. Saudi Arabia alone had foreign assets estimated at \$175 billion at the end of 1981; Kuwait had \$76 billion.<sup>3</sup>

Revenues from oil exports declined in 1981 and 1982. Conservation measures and recession in the industrialized countries cut demand for oil on world markets, resulting in declining prices and cutbacks in the levels of production. The effects were felt in varying degrees in all the OPEC countries. In Saudi Arabia, for example, budgetary revenue from oil exports fell from 327.9 billion Saudi Arabian riyals in 1982-82 to a projected 268.3 billion riyals in 1982-83. Investment income, however, continued to grow, from 26.8 billion riyals to a projected 35.0 billion riyals.<sup>4</sup>

<sup>2</sup>U.S. Department of Energy (DOE), *Monthly Energy Review*, July 1982.

<sup>3</sup>*Financial Times* (London), Sept. 28, 1981.

<sup>4</sup>Saudi Arabia, Ministry of Finance and National Economy. The Saudi Arabian riyal had an exchange value of 3.435 riyals to the U.S. dollar on September 30, 1982.

Table 1—Basic data: Eight study countries

Country	Population (est.) 1982	Population growth rate (est.)	Projected population 1990	Total area	Arable land and permanent crops, 1980
	Millions	Percent	Millions	1,000 km <sup>2</sup>	1,000 ha
Algeria	20.0	3.1	27.61	2,460	7,509
Libya	3.3	3.9	4.89	1,759	2,080
Saudi Arabia	10.4	6.1	13.33	2,331	1,105
UAE	1.0	7.5	1.83	83	13
Qatar	.2	5.3	.51	10	2
Kuwait	1.4	5.9	2.13	16	1
Iraq	14.0	3.4	21.13	445	5,450
Iran	41.2	2.9	50.75	1,647	5,950
Total	91.5		122.18	8,751	22,110

Sources: Population data from U.S. Department of Commerce (USDC), Bureau of the Census, unpublished; projected population 1990 by Econ. Res. Serv.; area from Central Intelligence Agency (CIA), *The World Factbook—1982* (Washington, D.C., 1982); arable land from Food and Agriculture Organization of the United Nations (FAO), *Production Yearbook*, 1981.

## Characteristics of the Region as a Market

Efforts to develop the agricultural sectors of the eight countries can have only limited effect, given the narrow agricultural resource base of the region except Algeria, Iraq, and Iran. Even these three countries face severe

physical constraints and costs of increasing most forms of production remain high. Self-sufficiency in food is therefore likely to remain elusive. Two major factors will increase the demand for imported foods and alter the composition of imports: (1) population growth and (2) increasing per capita incomes. Changing tastes are also important, but hard to predict.

Table 2—Key economic indicators: Eight study countries

Country	1981 Gross domestic product		1982 financial reserves	1981 inflation rate	Projected disposable income, 1990
	Total	Per capita			
	<i>Billion dollars</i>	<i>Dollars</i>	<i>Billion dollars</i>	<i>Percent per annum</i>	<i>Billion dollars</i>
Algeria	42.0	2,165	3.8	14.6	21.98
Libya	24.5	6,960	33.4	8	9.78
Saudi Arabia	154.7	15,782	161.6	2.4-3.0	48.98
UAE	28.9	31,067	38.6	12	NA
Qatar	7.9 <sup>1</sup>	29,900	16.1	11	NA
Kuwait	24.0	18,154	76.2	7	17.71
Iraq	35.2 <sup>2</sup>	2,730 <sup>3</sup>	31.8	20	52.47
Iran	86.6 <sup>2</sup>	2,163	3.0	24	41.24
Total	403.8		364.5		

NA = Not available.

<sup>1</sup>1980.

<sup>2</sup>1979.

<sup>3</sup>Figures are gross national product (GNP) and GNP per capita.

Sources: Total gross domestic product: USDC, Foreign Economic Trends and Their Implications for the United States, *Algeria*; Saudi Arabia, Ministry of Finance and National Economy; UAE, Ministry of Planning; Embassy of Qatar, Washington, D.C.; IMF, *International Financial Statistics* (for Kuwait and Iran); CIA, *The World Factbook—1982* (for Libya and Iraq).

Gross domestic product per capita: calculated on basis of data in column 1 and population data in table 1.

Financial reserves: *Africa Research Bulletin*, Feb. 15-Mar. 14, 1982, p. 6350, quoting *Petroleum Intelligence Weekly*.

Inflation rates estimated by reliable sources with experience in the countries.

Projected disposable income, 1990 (in constant 1975 dollars), by trend analysis, U.S. Dept. Agr., Econ. Res. Serv.

Table 3—Average daily crude oil production: Eight study countries<sup>1</sup>

Country	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982 <sup>2</sup>	Need <sup>3</sup>
	<i>mb/d</i>										
Algeria	1,097	1,009	983	1,075	1,152	1,161	1,154	1,012	805	700	1,200
Libya	2,175	1,521	1,480	1,933	2,063	1,983	2,092	1,787	1,140	1,200	1,070
Saudi Arabia	7,596	8,480	7,075	8,577	9,245	8,301	9,532	9,900	9,815	6,100	6,410
UAE	1,533	1,679	1,664	1,936	1,999	1,831	1,831	1,709	1,501	1,200	810
Qatar	570	518	438	497	445	487	508	472	405	400	60
Kuwait	3,020	2,546	2,084	2,145	1,969	2,131	2,500	1,656	1,124	700	900
Iraq	2,018	1,971	2,262	2,415	2,348	2,563	3,477	2,514	1,000	700	2,110
Iran	5,861	6,022	5,350	5,883	5,663	5,242	3,168	1,662	1,380	2,700	3,610

<sup>1</sup>Excluding natural gas liquids.

<sup>2</sup>Estimate.

<sup>3</sup>Average production level required to balance current accounts in early 1982.

Sources: 1973-81: U.S. Department of Energy, *Monthly Energy Review*; 1982 estimate: U.S. Dept. Agr., Econ. Res. Serv.; need: *Africa Research Bulletin* (London), Feb. 15-Mar. 14, 1982, quoting *Petroleum Intelligence Weekly*.

Several common features define the market potential of the eight countries:

1. Wheat is the staple in all the countries, consumed as couscous in North Africa and pita bread in the Gulf states. Rice is also important in some areas, especially in Iran and in urban areas generally. Poultry and sheep are the main sources of meat. Dates and figs are important in some areas. The relative uniformity of diet that developed from Arab Islamic culture is, however, diversifying as the culture modernizes and as urbanization advances.
2. Relatively few international commodity agreements restrict the trade of the region in contrast with, for example, trade in the products of tropical agriculture.
3. Entry into the market is difficult and requires a sound knowledge of socioeconomic conditions and political realities. Large cultural, linguistic, and other differences exist between importers in these countries and American exporters. There are also differences in bureaucratic procedures, often frustrating to the uninitiated, and other difficulties caused by the Arab League's boycott of Israel.
4. Unloading, warehousing, handling, and distributing facilities are still relatively underdeveloped.
5. The decisionmaking process may be unfamiliar to Americans. Governments there are usually the decisionmakers with respect to agricultural trade. Government decisions are made by a relatively few key individuals.
6. Information available in the United States about the markets in the region is still relatively sparse.

The boycott issue is particularly important to any assessment of the region's market potential since it affects dealings with all eight governments. Some Arab governments have allowed U.S. exporters to circumvent their 1954 boycott of Israel in various ways, so that the threat of the Arab League blacklist of companies no longer constitutes a serious impediment to trade. However, the threat of prosecution for violating antiboycott legislation in the United States continues to be a factor affecting U.S. exporters in their efforts to expand trade between the United States and the region.

A recent U.S. Government publication describes the situation of traders in Kuwait: "Some American companies are specifically boycotted. Other non-boycotted firms may not be able to meet some Kuwaiti boycott requirements without violating U.S. laws or they may be deterred from entering the market because of the presumed legal costs of dealing with the boycott issue. At times, an American firm is caught between the conflicting requirements of Kuwaiti and American law. Some of these conflicts can be resolved to satisfy both Kuwaiti and American law, while others remain insoluble."<sup>5</sup>

The problem posed by antiboycott legislation is most evident in countries having significant Palestinian populations and in countries and commodities where a large number of small private importing firms play a major role in trade.

<sup>5</sup>U.S. Department of Commerce, *Kuwait*, Foreign Economic Trends and Their Implications for the United States series, Dec. 1981, p. 14. For information about the provisions of antiboycott legislation, companies should contact the Office of Anti-Boycott Compliance, USDC. This office handled more than 2,000 inquiries about the law from attorneys and companies during FY 1981.

Table 4—Value of petroleum exports: Eight study countries

Country	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
<i>Million dollars</i>										
Algeria	1,566	4,195	4,295	4,843	5,680	5,895	8,611	12,508	10,821	8,350
Libya	3,456	7,125	7,328	9,580	12,729	11,881	19,668	29,370	18,454	12,895
Saudi Arabia	7,657	31,163	29,719	38,784	43,965	37,816	58,653	102,014	113,227	75,671
UAE	1,740	6,306	6,817	8,379	9,258	8,661	12,862	19,454	18,740	15,464
Qatar	601	1,979	1,757	2,137	1,974	2,293	3,577	5,387	5,295	4,009
Kuwait	3,033	9,292	7,886	8,952	8,819	9,424	16,673	17,854	15,275	10,876
Iraq	1,836	6,504	9,927	10,523	11,097	13,584	27,505	34,016	12,249	9,704
Iran	5,614	20,906	19,634	22,922	23,599	21,781	19,086	13,429	8,522	17,287
Total	25,503	87,470	87,363	105,760	117,121	111,335	166,635	234,032	202,583	154,256
Price <sup>1</sup>	2.80	10.00	10.72	11.51	12.31	12.54	17.28	28.61	32.11	NA

NA = Not available.

<sup>1</sup>Average price of Saudi Arabian oil exports in dollars per barrel.

Sources: International Monetary Fund (IMF), *International Financial Statistics*, various issues; prices from Saudi Arabian Monetary Agency (SAMA).



Governments of countries with significant Palestinian populations (such as Kuwait) must take Palestinian sentiment on the boycott issue into account. For this reason, they have decided to tolerate such practices as requiring U.S. exporters' representatives in the country to sign negative certificates of origin for traded goods stating that no components of the goods originated in Israel. Complying with this requirement immediately makes a U.S. exporter liable to prosecution under U.S. Federal and State laws prohibiting actions accommodating foreign buyers who discriminate against any country not already on a list of countries with which U.S. trade is prohibited (such as Cuba and Vietnam).

The boycott issue appears to be less of a problem in those countries where trading is handled by state trading corporations, such as Iraq. Even U.S. companies in which North Africa and Middle East OPEC governments themselves hold a minority of common stock are subject to the boycott; Kuwait, for instance, holds an interest in a number of such companies. Other countries where the boycott issue is particularly strong are Saudi Arabia and the UAE.

## Algeria

The Democratic and Popular Republic of Algeria is a socialist republic, headed by a president who may appoint and dismiss ministers and dissolve the legislature, which is elected by direct and universal suffrage. President Chadli Bendjedid has followed a collective leadership among the country's various power groups. The National Liberation Front (FLN), formed in October 1954 on the eve of the outbreak of Algeria's war of independence from France, is the sole legal political party and selects candidates for the legislature. The legal system is based on sharia (sacred Islamic Law) and French legal forms. Algeria is nonaligned in foreign policy.

## Population and Employment

Algeria's resident population was 20 million, according to a July 1982 estimate. Nearly 1 million Algerians live abroad, mainly in Europe. The average annual population growth has been estimated at 3.1 percent. Urban population has increased from 33 percent to 41 percent of the total resident population, reflecting a high rate of migration to urban areas. Total population in the year 2000 is projected at around 34 million, assuming a likely decrease in the population growth rate.

Employment creation outside agriculture has been quite high since 1974 because of the priority given to modern and capital intensive industries in Algeria's development strategy. The rate of unemployment in the nonagricultural sectors is estimated to have decreased from 28 percent in 1966 to 10 percent in 1979. New jobs created during 1973-79 were in services (50 percent), industry and construction (40 percent), and other activities (10 percent).

## Investment and Planning

Algeria's current 5-year plan (1980-84) reduces the rate of growth of investment in the heavy industry sector and aims to move the country toward a more efficient and diversified economy. Investment in agriculture is to be substantially increased. The plan was adopted at the end of 1980 following 2 years, 1978 and 1979, of political change and economic transition. (The last previous development plan encompassed 1974-77.) There is a greater official recognition of the role of the private sector in the Algerian mixed economy. A resolution adopted by the FLN Central Committee in December 1981, in effect, made the private sector respectable in Algeria's socialist environment and guaranteed private investment (in acceptable form) to a greater extent than before. These overtures to the private sector affect manufacturing, trading, transport, and agriculture—areas where the private sector plays an important role.

Objectives of Algeria's economic policy since the sixties have been self-sustained growth with full employment, development through the use of Algeria's own resources, and greater equality of income distribution, especially among regions. Rapidly increasing income from natural gas and oil exports enabled Algeria to invest \$5.3 billion in national development between 1975 and 1980. Industry, including petroleum, received about 57 percent. Revenues from petroleum exports peaked in 1980, however, and have recently declined, forcing a slowing of the rate of Government investment.

## Agricultural Sector

Algerian agriculture has three principal sectors: self-managed socialist, cooperative, and private. The self-managed socialist farms, run by elected executive committees, occupy much of the best land in the coastal areas. These farms, abandoned by European owners in 1962 and subsequently nationalized, use fertilizer and modern machinery and account for a large part of the country's commercial production. Cooperative farms were established in 1971 on land expropriated from absentee owners and large private farmers. By late 1981, a total of 1.5 million ha had been redistributed to nearly 100,000 recipients, and 132 farm villages had been built; an additional 224 were under construction. The cooperative sector used modern cultivation methods and equipment and was served by the supply and marketing cooperatives called CAPC's. Precooperatives, which organized farmers for development of large-scale projects such as land reclamation, and service cooperatives were also established.

The private sector, primarily composed of subsistence farms located on poor land and cultivated with traditional methods, nonetheless supports 50 percent of Algeria's farm families on 4.8 million ha of cultivatable land and 31 million ha of arid pasture. The Government in 1981 made credit available for the first time to private farmers and also allowed them more freedom in marketing their output.

**Crop production**—Rainfed agriculture predominates and thus Algerian crop production is subject to weather uncertainties. Irrigated production is severely limited by the topography and by the irregularity of surface water flow. Subsurface water is used for some irrigation in the south. An estimated 462,000 ha, about 7 percent of the total cultivated area, have been equipped for some type of irrigation. Of these, only 200,000 ha located in the north are equipped for perennial irrigation. About 185,000 ha are irrigated seasonally by floodwater, and 76,000 ha of desert oases, producing dates and vegetables, are irrigated with ground water.

Cereals, which account for the largest area under cultivation, are produced on about 6 million ha in several discontinuous regions, extending approximately 1,000 km from Tunisia in the east to Morocco in the west, and from the Mediterranean coast southward for up to 150 km. About half the cereal area is planted each year; the other half is left fallow. In the late seventies, barley and wheat were planted on 40 percent of the cultivatable land area and represented as much as 25 percent of the value of agricultural production.

## Oil Production and Reserves in Algeria

The two main oil production centers are around Hassi Messaoud and at Zarzaitine and Edjeleh, both located in eastern Algeria. Algerian oil is a light (between API 44 and API 41 degrees), "sweet" (low sulphur) crude, making it highly desirable. Algeria's proven recoverable oil reserves have been estimated at 8.2 billion barrels as of January 1981.

Production of natural gas began in 1961, and this soon became an important source of revenue for the Algerian Government. The main field is at Hassi R'Mel, 500 km south of Algiers. Algeria's proven recoverable reserves of natural gas, mostly nonassociated with oil reserves, are the fourth largest in the world after the Soviet Union, Iran, and the United States. As of January 1981, these reserves were reportedly 131 tcf, with an additional 35 tcf listed as probable and possible.

The state-owned company SONATRACH (Société Nationale pour le Transport et la Commercialisation des Hydrocarbures) is the main producer of both oil and natural gas. Until 1981, SONATRACH fell under the purview of the Ministry of Energy and Petrochemical Industry, since the Minister also held the position of president of SONATRACH. Even though oil production is projected to decline in the eighties, Algeria plans to continue its ambitious development program through increased revenues from exports of natural gas and liquefied natural gas.

Production of grapes for wine, at one time the principal export, has declined because of the contracting market for high-alcohol wine. Production of citrus, dates, and olives has not changed much in recent years. Increased demand from population growth has raised domestic consumption and cut exports of these commodities. Vegetables, grown along the coast, scarcely satisfy domestic demand.

**Livestock production**—Livestock contribute about 25 percent of the total value of agricultural production. Animals include, in descending order of numbers, sheep, goats, cattle, mules, and camels. Land left fallow in cereal rotation provides grazing for sheep. A large number of sheep spend the winter in the steppe and move north to the cereal zone of the high plateau in the spring and summer, although increased cereal cultivation on the plateaus has forced a greater proportion of the sheep to remain on the steppe throughout the year.

Most cattle are found in the wetter Tell and in the hills of northeast Algeria. These are small, late-maturing animals, used for both meat and milk, and owned by private farmers who husband relatively few head each. An increasing number of cattle are being finished in feedlots recently established by the state meat monopoly. There was a 33-percent increase in the number of cattle from 1975 to 1979 and a 25-percent increase in the number of sheep. Slaughter varies markedly from year to year and has shown a moderate upward trend over the last decade.

The Government has established many large poultry and egg farms, but statistics on these projects are not available. Plans call for establishment of large dairies on some land taken out of vineyards. The Government's objective is to increase dairy production to moderate the soaring imports of milk and dairy products. Most commercial dairy and livestock production comes from the state sector.

**Food processing**—Investments in food processing were of secondary importance during the early seventies when Algerian policy emphasized development of heavy industry. Between 1975 and 1979, food processing increased only 28 percent while the general production index of manufactured commodities rose by 77 percent. A major policy reversal in 1979 shifted priorities by increasing the light industry's budget to 2.5 times the heavy industry budget. A substantial part of this was to increase output of food products using labor intensive factories run by the Algerians themselves, rather than high technology which would require continuing presence of highly skilled expatriates. A large part of the industrial investment planned for 1981-85 will establish small- and medium-sized plants producing consumer goods, especially processing foods. Some of these are expected to be privately owned.

Food processing is dominated by four large state-owned companies (see Glossary of Abbreviations for names in French): the national company for food industries (SOGEDIA); the national millings company (SN SEMPAC); the national mineral water company (SNEMA); and the



national livestock feed office (ONAB) which was established to produce feed for livestock, but is now involved in the entire range of poultry and egg production and processing; it also slaughters cattle and sheep.

**Future agricultural production**—Agriculture, including irrigation and fisheries, received only 6 percent of investment funds between 1975 and 1980. Though a relatively minor share of total investment, these funds represent more than \$3 billion. However, Algeria has not achieved its goals in agricultural production despite increased investment.

The problem of a lagging agricultural sector goes beyond investments. The self-managed farms have not provided sufficient incentive for maximum worker effort, and the centralization of farm decisionmaking at the provincial or national level has created tremendous inefficiencies in farm management. The situation on the thousands of private farms has been worse for different reasons, since almost no modern inputs, extension, or credit are provided by the Government.

The 1980-84 5-year plan assigns high priority to increasing agricultural productivity and to reducing food imports over the long term. This is to be achieved primarily by restructuring the socialist and cooperative farm sector. The average size of the self-managed farms, currently 1,200 ha, will be reduced to 800 ha and the managers will have undivided responsibility for both production and marketing decisions. The supply of inputs, machinery, and extension services, and marketing of products will be linked into a new system which for the first time will also serve the private farms.

The Algerian planning process has also been partially decentralized, with greater responsibility shifting from the central government level to the provincial level. Livestock or crop-specific institutes have been established at the national level to undertake agricultural development including applied research, demonstration, and extension.

A cooperative project with Australia may hold significant implications for expanding Algerian production of wheat and forage. Technicians at the Centro Internacional de Mejoramiento de Maiz y Trigo (CIMMYT) in Mexico estimate that the mean wheat yield in Algeria could be increased from 800 to 1,200 kg/ha by introducing a rotation of wheat with medicago, a nitrogen-producing perennial legume that can be used in place of fallow, heavily fertilized with phosphate. In addition to increased wheat yields from the new rotation, medicago would provide 10 million tons of high-quality forage annually, enough to feed an extra 10 million ewe equivalents per year.

Official production goals for agriculture in 1984 are 3 million tons of grain, 140,000 tons of vegetables, and 700,000 tons of potatoes. This would meet 53 percent of the demand for grain, 57 percent of the demand for milk, 81 percent of the demand for red meat, and virtually all of the demand for most other agricultural commodities.

## Libya

The *de facto* head of state and of government of the Socialist People's Libyan Arab Jamahiriya is Muammar Qaddafi who as a captain was a member of the Free Officer Movement which seized control of the Government and abolished the monarchy in 1969. Application of Qaddafi's revolutionary Arab Socialist philosophy to the Libyan nation has resulted in fundamental changes in political representation, property ownership, and legal system (which is now based on sharia, sacred Islamic law). The General People's Congress, both an executive and legislative body, is the primary formal instrument of government. Political parties are banned, and mass organization is accomplished through the Arab Socialist Union, which includes geographically based and functionally based membership. In foreign affairs, Qaddafi's demonstrated proclivity to finance and sell arms to insurgent movements around the globe has won him the reputation of being one of the chief promoters of terrorism. These activities led to the U.S. decision in 1982 to embargo oil shipments from Libya.

## Population and Employment

Libya's population was estimated in 1982 at 3.3 million. The population growth rate was estimated at about 4 percent per year for the indigenous population, and about three times that rate for immigrant workers. Arabic-speaking Moslems of mixed Arab and Berber ancestry make up over 90 percent of the indigenous population. Representatives of more than 100 nationalities live in Libya.

The labor force participation rate for the indigenous population is about 20 percent, accounting for the country's need to import foreign workers. About 39 percent of the total labor force are foreign workers, mainly Egyptians.

## Investment and Planning

Investment in the early seventies was in piecemeal projects. Later, these projects were integrated into regional plans. In 1979, the National Physical Perspective Plan, also known as the "2000 Plan," set the pattern of development until the end of the century. A total of \$62.5 billion is to be invested through a series of 5-year plans beginning with the 1981-85 plan. The economy's expected annual growth rate is 9.4 percent.

Industry will get the largest share—23 percent. The plan envisages a decline of petroleum's contribution to GDP from 65 percent in 1980 to 47 percent in 1985. New industries include an integrated petrochemical sector with a methanol complex, an ammonia-urea plant, and an ethylene complex. The Misrata steel complex is expected to reach an annual production of 1.5 million tons by 1986, using iron ore from Brackh in Central Libya. The plan calls for a 15-percent decline in oil production by 1985 from 1.7 mmb/d in 1980. The declining demand for oil in 1981 and 1982 forced a 50-percent reduction in production. Longrun reductions in production could place Libya's

Investment plans in jeopardy. The effect of the decline was not as great as the decline in production would indicate because of the rise in the value of the dollar relative to the currencies of the countries where Libya does most of its buying.

Agricultural investment will be about 17 percent of total investment funds. A large part of this investment will go for land reclamation to reduce Libya's dependence on imported food. Irrigated land in the Jefara Plain and the Jabal al Akhdar will be increased by 66,000 ha. Dryland agriculture will increase by 350,000 ha and 1.5 million ha of pasture will be improved.

Libya will tap more of the fossil water underlying the desert. A pipeline is to be constructed to bring 2 mcm of water annually to the coast. But some will be used to develop desert agriculture. Despite the cost of \$10,000 per ha required to develop production at Kufra, 10,000 ha are to be added to Kufra's 10,000 ha of sprinkler-irrigated land. Similar projects will be developed at Maknoussa near Sebha and in the Sarir Basin at Tazerbo.

### **Agricultural Sector**

The agricultural census of 1977 reported 169,958 farms. Except for some large dairy and livestock farms established by the Government in recent years, land holdings are small, with slightly less than half the farms being less than 10 ha. Many farms are fragmented into noncontiguous plots.

**Crop production**—Crop production accounts for 60 percent of the value of agricultural production in Libya. Barley

accounts for the largest proportion of the total cultivated area, 56 percent in 1978, because it is well adapted to produce a crop under unfavorable growing conditions. Production of high-value crops, including olives, citrus, grapes, and vegetables, depends on irrigation.

**Livestock production**—Livestock contribute 40 percent of the value of agricultural production. Until recently, the most important animals had been sheep and goats owned by Bedouins following pasture with the change of seasons. Sedentarization of nomads and large investments in feedlots and dairy and poultry farms are creating a more intensive type of commercial livestock production based on the irrigated production of forage crops. A majority of the large livestock farms are state owned.

In 1980, 16 large modern dairy farms were functioning and another 6 were planned. More than 13,000 cattle were on commercial farms and feedlots and 3,700 imported breeding sheep were being distributed to farmers. Ten hatcheries, three poultry breeding farms with a capacity of 17 million chickens, and five broiler farms were also being established.

**Food processing**—The food processing industry has more than 1,800 establishments, including flour mills, dairies, fruit and vegetable canneries, fish canneries, feed mills, and bottling plants. Until the early seventies, most of these were small, private establishments, but most of the new plants are publicly owned. Beginning late in 1978, most private concerns were taken over by their workers who formed people's committees to carry out management functions.

**Future agricultural production**—The 1981-85 plan aims to reduce Libya's reliance on oil revenue by broadening its economic base, which will include food self-sufficiency. Specific goals for the agricultural sector are self-sufficiency in cereals, vegetables, fruits, meat, and dairy products by the early eighties, and improvement of living conditions in the rural areas in order to reduce migration to urban areas.

In spite of heavy Government investment in increasing agricultural productivity, potential production will probably continue to be restricted by water availability. Underground water and desalinated water from the Mediterranean could ease the water constraint in the long run, but only at a tremendous cost. Land reclamation projects will be continued; these already have added 42,000 ha to the cultivatable area, making possible the establishment of 5,500 new farms.

Farm labor shortages present another constraint to expanded agricultural production. Farm labor was in extremely short supply in 1980 because of the reduced inflow of seasonal workers from neighboring countries and because of an increased demand for labor in other sectors. These labor shortages are likely to continue.

Increased agricultural production in the past decade has scarcely made a dent in the burgeoning demand for food,

### **Oil Production and Reserves in Libya**

After discovery of oil in the desert in 1959 and the beginning of exports in 1961, Libyan oil production increased rapidly and peaked at 3.7 mmb/d in 1970. At that time, Libya was the third largest oil exporter after Saudi Arabia and Iran. The main production centers are at Sarir and Messla in the desert south of the coast of Cyrenaica. Proven reserves are small relative to output, however, because exploration has been disorganized and sporadic. Sizeable quantities of natural gas are produced in association with Libyan oil, with reserves estimated at 695,000 mcm.

The Qaddafi government has attempted to stimulate competition and optimize its power by granting concessions to both state and private companies from a wide range of countries. The Government has proved unwilling to nationalize completely the companies operating in Libya and continues to grant production-sharing rather than service contracts.



which has been fueled by the growth in population and income and by consumer subsidies. Growth in food demand over the next decade is expected to far exceed potential growth in production from both increased yields and acreage.

## **Saudi Arabia**

The monarchy is the central institution of government in Saudi Arabia. There is no formal constitution in the Western sense; political parties and national elections are unknown. Authority of the monarchy is based on Islamic law and on Arab tradition. Powers of the King are not defined, but are limited in practice by the fact that he must retain a consensus of the Saudi royal family, religious leaders, chiefs of important tribes, the armed forces, and the bureaucracy.

The Kingdom is divided into 6 major and 12 minor provinces. The major provinces are generally governed by royal princes or close relatives of the royal family.

Despite rapid economic progress, Saudi society remains strongly conservative and religious, with a tribal orientation. The King's policy is to encourage gradual modernization without undermining the country's stability and Islamic heritage.

### **Population and Employment**

The 1982 estimate of Saudi Arabia's population was 10.4 million, with an average of seven persons per square mile. Some urban areas and oases have densities of 2,000 persons per square mile. The annual population growth rate is currently 6.1 percent per year.

Saudis are ethnically Arabs, with some mixture of non-Arab adherents of Islam, most of whom immigrated as pilgrims and reside in the interior. Many Arabs from other Arab states are employed in the Kingdom. Until recently, most of the people of Saudi Arabia were nomadic or semi-nomadic. However, under the impact of rapid economic growth, urbanization has reduced this proportion to about 20 percent.

Most Saudis are Sunni Moslems who observe the puritanical Wahhabi interpretation of the Hanablite school. A small Shi'a Moslem minority resides in the eastern province. Arabic is the official language, but English is widely known. The literacy rate is climbing rapidly, but is still estimated to be below 25 percent. Life expectancy is estimated at 45 years.

### **Investment and Planning**

Main objectives of the Third Development Plan (1980-85) are: (1) establish and maintain a prudent level of food self-sufficiency; (2) provide opportunities for attaining reasonable agricultural incomes and raise the welfare of rural people to achieve a balance between economic and social

rewards attainable in rural and urban areas; (3) optimize use of agricultural water, land, and marine resources; (4) improve the skill level in the agricultural sector; and (5) protect the agricultural and marine environment. The Saudi Arabian Monetary Agency (SAMA) plays a key role in channeling oil revenues into development projects.

The United States enjoys close and longstanding ties with Saudi Arabia. In June 1974, the two countries agreed

## **Oil Production and Reserves in Saudi Arabia**

Since the early seventies, Saudi Arabia has taken a leadership role in the oil industry, both within the country and internationally. The role of Aramco, owned by several oil companies, has changed from that of a sole producer-owner to a partnership role and then to that of a consultant and contractor for the Saudi Government in energy production and development.

Saudi Arabia is the world's largest exporter of petroleum and was until 1982 (when it fell below the United States) the second largest producer of petroleum after the Soviet Union. Crude oil production averaged about 9.8 mmb/d in 1981, creating revenues in excess of \$100 billion (tables 3 and 4). Saudi proven and probable reserves of oil, considered the world's largest, are estimated to be 178 billion barrels. There are 40 known fields, with 93 percent of known reserves located in just 15 fields.

Saudi decisions regarding production and capacity expansion are heavily influenced by a desire to maximize ultimate recovery and to stretch out the producing life of the Kingdom's oil resources. The Saudis have maintained an overall production ceiling since 1974, relaxing it when other policy considerations have dictated. The then current production ceiling of 8.5 mmb/d was lifted in the first quarter of 1979 to allow an additional 1 mmb/d of production to stabilize the world oil market after the revolution in Iran. Output was further stepped up in the fourth quarter of 1980 to about 10 mmb/d to help make up for the drop in Iraq's production. In the first half of 1982, as world oil supplies increased, the Saudis agreed to cut back production in order to try to preserve OPEC's pricing structure. By mid-1982, production dropped to 5.5 mmb/d as world demand slackened.

Aramco has also played a key role in the development of Saudi Arabia's natural gas supplies. Saudi Arabia's known reserves of associated gas were 63 tcf in January 1980; reserves of nonassociated gas are not known.

to set up a commission for security and economic cooperation. A reimbursable technical assistance agreement was signed in February 1975. A Joint Economic Commission has been established with offices in Riyadh. Cooperation between the two countries under commission auspices is growing in the fields of manpower and education, agriculture, science and technology, and industrialization.

## Agricultural Sector

Most agricultural output continues to be produced on small farms, averaging 2 to 5 ha for wheat and vegetable production and up to 8 ha for farms producing only wheat. Recent expansion of irrigated cropland by private firms in three areas—the Jizan emirate, Qassim, and eastern province—has expanded production by large farms. Most of these agribusiness projects specialize in commercial crops such as wheat, tomatoes, and potatoes, with an average farm size of 8 to 20 ha. Attractive subsidies for poultry and dairy operations have encouraged expansion in those industries, particularly near urban areas.

Saudi farms are highly mechanized as a result of subsidies that cover 45 percent of the cost of tractors and provide low-interest loans on the remainder. Saudi Arabia had about 3,500 tractors in 1980, including about 1,500 four-wheel tractors and 2,000 small garden tractors and rotary tillers. Saudi Arabia imports all of its farm machinery.

**Crop production**—Crop production includes alfalfa, wheat, sorghum, barley, corn, and millet, in descending order of volume produced. Most wheat, barley, and alfalfa is produced in the irrigated north-central part of Saudi Arabia while sorghum, millet, and some alfalfa are produced in the southwestern Jizan emirate near the Asir Mountains.

Irrigation developments and subsidy programs have had a great influence on levels of cereals production in recent years. The production subsidy of about \$1,050 per ton for wheat is probably the highest in the world, resulting in a 33-percent increase in the area planted in wheat between 1978/79 and 1980/81. Production of alfalfa, grown around the base of date trees, has increased by about 25 percent from 1977 and 1978 levels; it should expand further as part of Government plans to expand livestock production. Sorghum production has also increased as a result of lucrative Government subsidies. Millet production has declined because of changing consumer preferences and lack of subsidies, and because expanded irrigation has made it possible for farmers to shift to more profitable crops.

**Livestock production**—Livestock production accounted for about 32 percent of the value of agricultural output in 1980. Lamb and mutton continue to be the most important meat produced in Saudi Arabia. Imported live sheep fattened locally before slaughter now make up most of the total mutton output. Goats are produced on small farms and are consumed locally. Poultry and dairy production have increased dramatically since 1975, as in other Middle Eastern countries. Most dairy and poultry operations

have been established as a result of substantial subsidies and low-interest loans and are located near urban areas, particularly Jiddah and Riyadh. Still, 1980 domestic production of poultry meat met only 15 percent of domestic demand and egg production met only about 50 percent.

**Food processing**—Development of a food processing industry for processing imported and domestically produced foodstuffs is an important component of Saudi Arabia's industrial development program. Potential processed food industries are poultry and date processing, bakeries, dairies, and fruit and vegetable canneries. Processing plants are to be located in the major agricultural areas.

**Future agricultural production**—Saudi Arabia invests about \$500 million annually in its agricultural sector and it may invest more than \$1 billion annually in the early eighties. Primary objectives of Saudi agricultural policies are to distribute petroleum wealth to the 50 percent of its population still dependent upon agriculture and to increase production of fresh items, particularly fruits, vegetables, and alfalfa.

Production of all of these commodities should increase as investments in irrigation expand the cultivatable area. Government incentives have encouraged private investors to further develop the Jizan agricultural region and the eastern province and to develop irrigated cropland near Mecca and Medina where millions of Moslem pilgrims assemble annually, creating a large demand for food. These three major project areas and investments in other oases could expand irrigated cropland by 80,000 ha, or 20 percent over 1980 irrigated area, by 1985.

In the Jizan area, new cropland is likely to be planted in corn, cotton, and peanuts. Expansion in the eastern province by Aramco should increase production of mangoes, bananas, and avocados. Orange groves and fruit orchards are being developed in Taif and Tobuk, and in Hail near the Iraqi border. Saudi Arabia is planning to achieve seasonal self-sufficiency in fresh vegetables.

The acceleration of investment in the livestock sector should expand Saudi production of meat and poultry. Construction of large broiler houses could increase poultry meat production to 150,000 tons by 1985—five times the 1980 level but still below the current level of demand. A 50-percent subsidy for animal feed and incentives for the construction of feed mills is likely to increase imports of live sheep and goats, and greatly expand fresh meat production by the mideighties.

## United Arab Emirates

The United Arab Emirates (UAE) is a federation made up of the former Trucial States of Abu Dhabi, Ajman, Dubai, al Fujayrah, Ra's al Khaymah, Sharjah, and Umm al Qaywayn. The pace at which each emirate is evolving from traditional to modern society is set primarily by the wealth and



population of each and by the economic and social policies of the rulers.

## Population and Employment

UAE population was roughly estimated at 1 million in 1982. The literacy rate is about 25 percent among the indigenous population, which comprises about 20 percent of the total. The remaining 80 percent is composed of other Arabs, Iranians, Pakistanis, Indians, and Western Europeans. It is this huge foreign labor force whose rapid growth has pushed the UAE population growth rate to an estimated 7.5 percent per year. Arabic is the official language, although both Farsi and English are widely spoken.

## Agricultural Sector

Most agricultural output is produced by small, owner-operated farms. Extensive Government investment in the agricultural sector since 1975 has transformed these farms from subsistence plots to modern production units. While farms continue to be small, averaging 6 ha, almost all of them are now commercialized and Government subsidies have brought rapid adoption of improved seed varieties, fertilizer, and mechanical equipment. Greenhouse agriculture is now extensive in the al Ain vicinity, making it possible to produce two vegetable crops per year. Agribusinesses for meat, egg, and dairy production have been established on the edges of cities, particularly in Dubai and Ra's al Khaymah, but their level of activity remains far below expectations.

Use of modern agricultural inputs is increasing. Fertilizer use, estimated at 3,500 tons in 1980, should expand greatly when the UAE completes construction of a new factory with an annual production capacity of 200,000 tons of urea. Most fertilizer is now imported from Kuwait. Subsidies for tractors have increased their number to about 500 in 1980. Sprinkler and drip irrigation has increased substantially.

**Crop production**—Agricultural production is limited to dates, vegetables, fruits, and some meat products. Although production of crops, poultry, and dairy products expanded rapidly during the late seventies, the UAE is not attempting to achieve food self-sufficiency; its dependence on imports to meet most of its food needs will continue.

Leading crops are dates, tomatoes, alfalfa, melons, squash, cucumbers, lemons, green peppers, and tobacco. New date orchards were planted in Ra's al Khaymah and Abu Dhabi in the late seventies. Orange and lemon orchards have been planted under irrigation in the al Fujayrah emirate.

Most vegetable production is located in the irrigated fields of Ra's al Khaymah and al Ain and is expanding. A large increase in tomato production is attributable mainly to construction of greenhouse complexes and from adoption of new, high-yielding varieties of tomatoes.

Very little grain is produced, in large part because Government subsidy programs have favored vegetable and livestock production, although some sorghum and millet are produced in eastern areas. Alfalfa is used for livestock raised on small farms. New poultry and dairy complexes rely on imported feedstuffs.

**Livestock production**—The livestock sector includes the newly established poultry and dairy industries and small-farm camel and goat production. Increasing numbers of sheep and goats are imported live and fattened for slaughter. Government subsidies have brought substantial expansion in the output of broilers and eggs. Establishment of modern dairies near several cities has increased milk production to about 10,000 tons in 1980 from only 2,000 tons in 1975. Local milk is blended with a larger volume of imported condensed and powdered milk. Dairies receive large subsidies. The introduction of refrigerators in households has contributed to increased demand for fresh milk.

**Food processing**—Food processing facilities are expanding rapidly. New flour mills built at Dubai and Abu Dhabi had flour production estimated at 150,000 tons in 1980. Some of the largest poultry firms have built their own feed mills using imported barley and corn. Soft drink and water bottling plants have also expanded.

**Future agricultural production**—The UAE spends over \$100 million annually for agricultural development. Investment and subsidy programs have been concentrated in

## Oil Production and Reserves in the UAE

Oil resources are concentrated in Abu Dhabi, with 83 percent of oil revenues, Dubai with 16 percent, and Sharjah with 1 percent. The other four emirates depend on the largesse of the federal budget. Oil production in the UAE averaged 1.7 mmb/d in 1980.

While the UAE Ministry of Petroleum keeps tabs on overall production levels, each emirate reserves control over mineral rights and determines, in effect, its own oil exploration and marketing policy.

Total proven oil reserves have not expanded beyond about 30 billion barrels. Proven reserves of natural gas are conservatively estimated at 20 tcf. Geologists believe there is considerable undiscovered recoverable resource potential offshore and in deep onshore formations.

Oil Minister Mana Sa'id al-Otaiba and other UAE officials have indicated that oil production policy will be determined by a number of factors other than production capacity, and have spoken frequently of producing only enough oil to generate revenues sufficient for current needs.



irrigation projects, expansion of greenhouse agriculture, and development of poultry and dairy agribusinesses. The UAE's agricultural development objectives are limited due to the unsuitability of the country to extensive agricultural production. Their primary objectives are to spread the petroleum wealth to a declining rural population through the use of lucrative subsidy and price support programs, and to assure steady local supplies of fresh vegetables, poultry, and dairy products.

Irrigation projects using dams to capture mountain runoff nearly doubled the cultivatable land area in the past decade. Greater use of underground water, as in the al Fujayrah emirate, could increase the cultivatable area further. More water desalination plants for irrigation will likely be built because of the need to conserve underground water.

Greenhouse agriculture, used for year-round production of vegetables, is likely to expand as a result of attractive construction and production subsidies. Most greenhouse units, modified from the early highly capital-intensive projects of midseventies, have been constructed in the al Ain region. Greenhouse production should lead to increased output of fresh vegetables, particularly tomatoes and cucumbers. Vegetable production is likely to meet much of the expanding domestic demand, with potential for exports to neighboring Middle Eastern countries, particularly between January and March.

## **Qatar**

Qatar occupies the principal peninsula jutting northward into the Persian Gulf from the Saudi Arabian mainland. The country is evolving rapidly from a traditional society to a modern state under the guidance of its Amir (Chief of State). Government departments have been established to meet the requirements of social and economic progress. In 1970, anticipating independence, Qatar promulgated a

"Basic Law," including a bill of rights, practically the equivalent of a constitution. No political parties exist.

## **Population and Employment**

Qatar's population was estimated at 200,000 in 1982. The annual population growth rate was about 5.3 percent. Most residents of Qatar are not of Arab origin; expatriates from Iran, India, and Pakistan make up the majority. Almost all foreigners are temporary workers. Nomadic Bedouin tribes roam the interior with herds of camels, sheep, and goats.

Qataris are principally Sunni Moslems of the Wahabi sect. English is in widespread use, even more so than Arabic because of the large foreign population. Education is compulsory and free for children between the ages of 6 and 16. The rapidly increasing literacy rate is now estimated at 25 percent.

## **Investment and Planning**

The sudden expansion of Qatar's economy that occurred between 1974 and 1977 due to the oil price boom has leveled off. Growth continues, but at a much slower rate since 1978, when the Government stepped in to tighten the money supply, combat the rapid increase in the cost of living and uneven economic growth, reduce the influx of foreign labor, and generally lessen the social strains of an overheated economy. The construction industry has been particularly hard hit. Significant industrial developments outside the oil and gas sector include a cement plant and construction of an ethylene and low-density polyethylene plant.

## **Agricultural Sector**

The average farm size is 5 to 6 ha. Farmers use the most modern techniques and machinery as a result of extensive

## **Oil Production and Reserves in Qatar**

Oil output peaked in 1973 at 570 mb/d and has been declining since then. The main producing areas are Dukhan and three offshore fields in the northeast. Qatar has been extensively explored for oil, and the prospects for further discoveries are not promising. Estimates of recoverable oil reserves reach 6 billion barrels, enough at current production rates for another 35 years. Known recoverable reserves reach 3.8 billion barrels.

Sizable quantities of natural gas were found in the process of exploring for oil. Qatar has at least four gas sources: associated gas from Dukhan and the offshore fields; nonassociated gas from the Khuff layer beneath the Dukhan field; and what is consid-

ered to be the largest natural gas discovery in the world, the nonassociated gas field called the Northwest Dome. Average natural gas production in 1979 was 500 mmcf/d.

Government responsibility for Qatar's oil policy is lodged with the Minister of Finance and Petroleum. Under his jurisdiction, the Department of Petroleum Affairs is accountable for the development of the industry and monitors the technical and economic aspects. The national oil company, QGPC, set up in 1974 to supervise the operation of the industry, controls marketing and owns the state's share in all oil and natural gas ventures. Most of the country's oil is still sold to companies that have longstanding links with Qatar, such as BP, Mobil, Exxon, Royal Dutch/Shell, Compagnie Francaise des Petroles, and ENI.

Government subsidy programs. In the late seventies, subsidies covered more than half the farmers' expenditures for fertilizer, seed, and equipment. Government subsidies have also encouraged development of dairies, broiler and egg enterprises, and sheep feedlots. Agribusinesses now account for a substantial proportion of Qatar's agricultural production, mostly in the livestock sector.

Fertilizer use increased substantially in the past decade. Qatar has one factory producing nitrogenous fertilizer. About 10 percent of the 200,000 tons produced in 1980 was used by Qatari farmers; the rest was exported. A second factory is under construction.

**Crop production**—Crop production includes sorghum, dates, alfalfa, and vegetables. Vegetables are the most valuable crop, representing about 40 percent of the value of total crop production in 1980. Government programs have contributed to striking gains in output of all vegetables in the past 5 years, particularly in tomatoes, cucumbers, and watermelons. Fertilizer and irrigation contributed to these gains, as has construction of plastic greenhouses enabling farmers to produce through the year. Qatar is an important regional exporter of seasonal vegetables.

Fruit production also attracts Government interest. Dates have traditionally been the major fruit crop and they continue to account for most fruit production. Other major fruits are mangoes, bananas, and citrus. The Government is undertaking programs to greatly expand fruit production, including payment for up to half the cost of planting new orchards.

**Livestock production**—Qatar's rapidly expanding livestock sector contributes about 45 percent of the value of total agricultural output. Mutton is the most widely consumed meat, although poultry consumption has risen rapidly. Many sheep, goats, cattle, and camels are owned by small farmers. These animals graze on winter pasture and depend on sorghum and imported feeds in the summer. Government subsidies covering half the cost of feed and free marketing and slaughtering services have encouraged development of sheep and goat feedlots. Imports of live sheep and goats for these new feedlots account for most recent growth in fresh meat production. Large modern poultry enterprises supply most of the broilers and eggs produced in Qatar. Highly mechanized dairies for European breeds of cattle account for the rapid growth in milk production since 1975.

Increased incomes and immigration have contributed to a rapid increase in the consumption of meat and livestock products. Total meat output was 27,000 tons in 1980, meeting only about 34 percent of demand. Dairy and egg-laying enterprises now supply most of the milk and eggs sold in Qatar, but imports are still needed.

**Food processing**—Growth of the food processing industry has been limited by the small size of domestic demand and by its reliance on imported components. Bottling plants for blending milk, soft drinks, and fruit juices have

expanded rapidly; imports of these products have declined. Qatar has one flour mill in operation that currently meets domestic demand.

**Future agricultural production**—Qatar has invested about \$100 million annually in its agricultural sector since 1976; investment is likely to continue at about that level. The country's objectives for agricultural development are somewhat limited. Qatar plans to emphasize increased production of those items that consumers prefer to purchase fresh. Investments in subsidies, irrigation, and marketing are aimed at increasing production of fresh vegetables, freshly slaughtered meat, and green alfalfa for feed.

Most increases in crop production are likely to result from major investments in expanding irrigated cropland, particularly along the north-central coastline. A combination of desalinated water, irrigation, and topsoil imports is expected to create narrow greenbelts a few thousand feet wide along coastal roads. Major projects now under construction are the Uwsam Said project on the south-eastern coast and irrigated farms near Dukhan and along roads near Doha. These and other developments could increase cultivated area to 6,000 ha by 1985, a threefold increase from 1980.

## Kuwait

The State of Kuwait is a nominal constitutional monarchy, led by the Amir Jabir al Ahmad. There is a 50-member National Assembly, reinstated in March 1981 after being suspended in 1976. The assembly is elected by native and naturalized males over 21. The legal system contains a civil law system based on Islamic law, but the judicial review of legislation has not been established. Political parties are banned in Kuwait, but some small clandestine political groups are active. A significant political influence is exerted by the 300,000-member Palestinian community.

## Population and Employment

The 1982 estimate of population is 1.4 million, of which only 12 percent are native Kuwaitis. The average annual population growth rate has been estimated at 5.9 percent, reflecting the immigration of foreign workers. The percentage of the population in urban areas increased from 72 percent in 1960 to 88 percent in 1980, though urbanization slowed in the seventies over the previous decade.

Services employ an estimated 74 percent of the labor force, with industry employing 11 percent, construction 11 percent, and agriculture about 2 percent. Around 70 percent of the labor force is non-Kuwaiti. There is more organized labor in the oil industry and in the civil service. The literacy rate is estimated at 60 percent.

## Investment and Planning

Government revenues from July 1980 to June 1981 amounted to \$22.1 billion, of which \$15.5 billion were



from sales of oil and natural gas and \$6.1 billion were investment income. With total Government expenditures in that year of only \$9.5 billion, the Government faces the problem of massive surplus accumulations. Thus, the major determinant of Government spending is not the availability of funds, but the possibilities for spending them.

A major aim of Kuwait's petroleum policy (in addition to that of conserving the country's oil and gas reserves) is to increase the domestic value added to exports. The Government investment in the petroleum sector is thus focused on refining oil and producing petrochemicals. Current

plans are to expand and upgrade domestic refineries substantially by 1985 in order to process about 50 percent of the country's crude oil output and produce a lighter, more valuable mix of products. The tanker fleet is being expanded to carry refined products. Opportunities for joint ventures abroad in refining and petrochemicals are being pursued. The Kuwait Petroleum Corporation (KPC) is also investing in oil exploration abroad and has recently acquired an oil drilling and service company.

"Outside the oil sector, the main thrust of Kuwait's economic policies in recent years has been to utilize the enlarged financial resources derived from oil exports to broaden the income base of the economy, encourage the growth of financial institutions, and strengthen the development of a welfare state," according to a recent IMF report.<sup>6</sup>

## **Oil Production and Reserves in Kuwait**

Kuwait has led the way among Middle East governments in negotiating greater participation in the production and marketing operations of its oil concessionaires; in 1976, it assumed 100-percent ownership of the Kuwait Oil Company. The company had been formed jointly by Gulf and BP and had expanded its production capacity rapidly after the 1951-54 revolution in Iran, reaching 3 mmb/d by 1973. In 1980, the Government established the Kuwait Petroleum Corporation, an umbrella company responsible to the Ministry of Oil for all operations in the hydrocarbons sector. KPC is capitalized at \$3.7 billion.

Kuwait cut back petroleum production in the first quarter of 1980 from 2.5 mmb/d to 1.5 mmb/d from the Burgan field. Three factors explained the cut-back: (1) world oil price increases had provided the Government with substantial surplus revenues; (2) Government technocrats and political figures argued that production levels should be lowered in the interest of conservation; and (3) the Government was concerned about the effect of surplus revenues on the cost of living.

Kuwait is predicted to keep oil production below its current ceiling of 1.5 mmb/d, excluding the Neutral Zone, for the foreseeable future. Exports from the Kuwaiti share of Neutral Zone production are not likely to exceed 250-300 mb/d. Kuwait's proven oil reserves of 68 billion barrels are estimated to be the second largest in the world. Exports of liquid natural gas will probably remain below processing capacity as long as oil production is restrained. All of Kuwait's current gas production is associated. While there are persistent reports of potential sources of nonassociated gas, most of it is probably located in deep onshore formations or offshore where territorial boundaries are not clearly defined. Kuwait has not undertaken large-scale exploration in either area.

In response to excess demand in the midseventies, the Government initiated a reorientation of economic policies with the objective of achieving rates of growth in the non-oil sectors consistent with the maintenance of domestic financial stability, and obtaining a desirable amount of foreign labor, according to the same IMF report. Monetary policies became restrictive in 1971, and stringent liquidity requirements were imposed on commercial banks by the central bank in 1978. Fiscal policy also shifted to a less expansionary stance; the consequent easing of demand pressures moderated the inflation rate. The annual rate of inflation has recently ranged from 5 to 8 percent.

Until 1973, revenues from oil exports not absorbed domestically were generally invested overseas by the Government without the use of financial intermediaries. The domestic banking system was mainly a conduit for the transmission of private financial resources to foreign financial markets. Since the oil price increases of 1973-74, the Kuwaiti financial system has undergone a pronounced transformation in size, structure, and function. Commercial banks' activities have expanded sharply with the increase in Government domestic spending and the resulting growth of private and mixed-sector investment, both domestic and foreign. Furthermore, new types of financial institutions, such as specialized banks and investment companies, have been established. For example, the Government places much of its investment overseas through the three largest local investment companies—the so-called Three K's—by subscribing to the bulk of their underwriting of Eurodollar issues and also through direct investments. In addition, even larger sums are probably placed through major Western banks. The Government decided in 1982 to establish a state investment bank.

By law, the Government must place 28 percent of its revenues in the Reserve Fund for Future Generations and the State General Reserve. The assets of these funds were estimated to be \$45 billion as of December 31, 1979. Most of these assets are invested overseas, with 66 percent believed to be in dollars. West Germany and Britain are

<sup>6</sup>International Monetary Fund, *IMF Survey*, Apr. 5, 1982.

also said to be major recipients. Liquid investments, medium-term bonds, and stocks are reportedly preferred, in that order.

## **Agricultural Sector**

Rainfall, averaging 100 to 130 mm annually, is generally insufficient for agriculture, and most major sources of underground water are too brackish for irrigation. The only natural source of fresh water for irrigation is in northern Kuwait, where a fairly large reserve was discovered in the early sixties and a small irrigation network was established. Most of the extremely limited agricultural production is located in this irrigated northern region and in scattered areas along the coastline of the Persian Gulf. Several desalination plants were constructed by the Kuwait Oil Company, providing a new source of irrigation water. This new water has enabled Kuwait to increase its cultivated area from 650 ha in 1973 to about 1,600 ha in 1980. Use of desalinized water for irrigation is perhaps greater than in any other country in the world.

Most Kuwait farms are small, averaging 3 ha. About 95 percent of Kuwait's farmers continue to operate their own farms, but only as a hobby or a secondary source of income. Small farms produce mostly vegetables, while feed and livestock are produced by new agribusinesses.

Low-cost fertilizer is provided by Kuwait's expanding petrochemical industry. Kuwait's single fertilizer factory produced about 400,000 tons of nitrogenous fertilizer in 1980, of which only 4,000 tons were used in Kuwait. A second factory is planned. As a result of attractive subsidies, the ratio of tractors to land in Kuwait may be the highest in the world, with small four-wheel garden tractors being the most common. Irrigation technology is very advanced.

**Crop production**—Horticultural production accounted for about 50 percent of the cultivated land in 1980. Use of desalinized irrigation water and the distribution of low-cost fertilizer resulted in a fourfold increase in vegetable production between 1973 and 1980, mostly on small farms. Tomatoes, cucumbers, and melons accounted for 50 percent of total vegetable production. Production of lettuce, cabbage, and broccoli is expanding rapidly. Date production, concentrated in several oases in northern Kuwait, remained steady throughout the seventies.

Alfalfa grown under irrigation accounts for most of the remaining cultivated land. While vegetables are grown primarily on small farms, alfalfa is grown by larger agribusiness operations, usually jointly with some type of livestock operation. Most alfalfa is produced on two modern dairy farms, which together farm over 33 percent of the total cultivated area. The dairies use the alfalfa as feed for their own operations. Total alfalfa production currently meets less than half of the country's needs. Some sorghum and barley, amounting to less than 1,000 tons annually, are grown for feed on Bubiya Island.

**Livestock production**—Livestock contribute about 60 percent of the total value of agricultural production with chickens, cattle, sheep, and goats predominating. The livestock sector has expanded rapidly in recent years as a result of Government subsidies and incentives to private farmers and agribusinesses. Meat production has expanded about 11 percent annually since 1977 with poultry meat making up about 45 percent of that total. Most of the expanded meat production is based on imports of feed grains and soybean meal, and from imported live sheep and goats which are fed for a few weeks to several months before slaughter. The country's two major dairies produce about 14,000 tons of milk annually which is blended with imported powdered milk.

**Food processing**—Development of Kuwait's food processing industries has been concentrated in a few areas and it relies heavily on imported components. Large bottling plants that blend fruit juices, soda, and reconstituted milk have become an important local industry. The Kuwait Supply Company (KSC) operates one flour mill which meets local demand and produces some flour for export. Some bulk breaking and packing operations, particularly of nut products, are carried out in the duty-free zone. The poultry processing industry continues to expand output of dressed broilers.

**Future agricultural production**—Agricultural development is a priority for the Government. Large investments have been made to improve agricultural productivity and to transform barren desert into irrigated cropland. Kuwait has recently invested about \$80 million annually on agricultural development, including expenditures on water desalination, irrigation, and substantial subsidies for construction and agricultural inputs. Investment is projected to increase to \$120 million annually during the eighties.

Expanded vegetable production will remain a priority in an effort to stabilize prices and assure a steady supply of fresh produce. Prices and availability of fresh produce have fluctuated widely because of the unreliability of other Middle East suppliers. Kuwait is attempting to achieve seasonal self-sufficiency in vegetable production. However, growth in consumer demand is projected to outstrip expansion in production by about 5 percent annually throughout the eighties.

Kuwait expects irrigation and land reclamation efforts to eventually expand the cultivated area to between 12,000 to 16,000 ha, 25 times as large as the 1973 cultivated area. Projects in the northern oases can be expected to increase cultivated area from 1,600 ha in 1980 to about 6,000 ha in 1985, with most of the new area planted in alfalfa, dates, potatoes, and tomatoes.

Poultry and livestock production should continue to expand as attractive feed subsidies encourage private investment in poultry, dairy, and feedlot operations. Production of meat and livestock products has been able to meet only a small proportion of consumer demand (31 percent



of domestic meat demand in 1980, compared to 12 percent in 1976 and 10 percent in 1970).

## Iraq

Iraq has been a republic since 1958. Executive and legislative powers are exercised by the President and the Revolutionary Command Council, respectively, in accord with the provisional constitution of July 16, 1970. The political system is under the firm control of the Arab Socialist Baath Party. There are 18 governorates, or provinces. Limited self-rule has been granted to the Kurds in three northern governorates.

## Population and Employment

Iraq's population in 1982 was estimated at 14 million, with an annual growth rate estimated at 3.4 percent. About 95 percent of the population adheres to some form of Islam. Between 50 and 55 percent are Shiites, and most Shiites are Arabs. About 25 percent are Sunni Arabs; another 18 percent are Sunni Kurds.

Arabic is the official language and native tongue of about 71 percent of the population. Kurdish is the official language in the northern governorates. English is the most widely spoken foreign language. Literacy is estimated at between 25 and 40 percent by outside observers, while the Government suggests figures ranging as high as 70 percent.

## Oil Production and Reserves in Iraq

The conflict with Iran which broke out in September 1980 had a greater than anticipated impact on Iraqi oil production. Before the war, Iraq was exporting about 3 mmb/d with a total productive capacity of 4 mmb/d. Exports were less than 2 mmb/d in early 1982, flowing through pipelines to Syria and Turkey because of the cutoff of shipments through the Persian Gulf, until Syria closed the pipeline through that country.

Before the war, Iraq had been pursuing an ambitious program to expand production beyond its 1980 capacity. This program included the development of new fields and the expansion of the North Rumaila field. Once normal conditions return, Iraq will probably give this development program a high priority.

At the same time, Iraq embarked on an ambitious natural gas production program to halt the flaring of natural gas and to substitute gas for oil in domestic energy consumption. Iraq produces slightly more than 1 bcf/d of associated gas, 85 percent of which is flared.

## Agricultural Sector

The two major farming areas are located in the rainfed steppes and foothills of the mountainous northeastern part of the country, and in the irrigated alluvial plains between the Tigris and Euphrates rivers in the central and southern part of Iraq. Animals are grazed on the steeper slopes of the northern mountain region where farming is impossible. The western part of the country, amounting to almost 50 percent of the total land area, is desert.

Most Iraqi agricultural production is from the small farm sector. These farms, averaging about 5 ha, could be highly commercialized as a result of Government policies to provide subsidies and programs only to farmers producing commodities for market. Most of these farms, however, still depend upon traditional cultivation practices, and their production provides little more than a subsistence.

The small-farm sector was formed by an extensive land redistribution program in the early sixties that carved up large farming estates and distributed land titles to the country's large tenant and landless population. As part of the same agrarian reform program, Iraq's socialist Government organized collectives and state farms. However, collectivized crop production never became extensive because of management problems and peasant resistance. By 1977, collectivized operations accounted for only about 190,000 ha of farmland and about 10 percent of total agricultural production. The state is currently reducing cooperatively farmed acreage and increasing incentives and investments in the private farming sector. However, newly formed cooperatives and state farms which employ farmers as wage laborers have become important producers in the capital-intensive poultry and dairy industries.

**Crop Production**—Wheat and barley are the most important grains. They account for over 70 percent of the cultivated area in the rainfed northeastern region. Annual production levels for the two crops vary widely because of their dependence on rainfall and because barley, in particular, is often planted on marginal land with little use of fertilizer. Corn and rice represent only a small proportion of total grain production. Corn has been introduced only recently; it is grown almost exclusively on state farms for their own feed needs. Rice is grown in the river valleys.

The producer price for wheat was raised significantly in 1980 to \$242 per ton from \$170 per ton in 1979. This encouraged expansion in wheat production.

Vegetable production has expanded dramatically in the last several years, particularly near urban areas where marketing networks are well developed. Watermelon is the most valuable horticultural field crop and is second in value among all crops grown in Iraq. Watermelon production increased by an astounding 80 percent during the seventies. Tomato production also increased by 80 percent during that period, and potato and green bean production increased as well. Further expansion in production of



marketed vegetables by private farmers is likely to be constrained by Government price controls.

Fruit production is concentrated in two areas. Dates, mangoes, oranges, and grapes are grown under irrigation in the southern plain area and apples, peaches, pears, plums, and apricots are produced in the northern foothills. Dates are the most important fruit grown in terms of volume. They are also a major export item and in some areas are a staple of the local diet. The value of date production is low compared to other fruits despite a quadrupling of date prices during the seventies, reaching over \$150 per ton in 1980. Date producers are given free fertilizer and extensive subsidies.

Iraq produces cottonseed, flaxseed, sesame seed, peanuts, and soybeans. Production of these crops remains limited, however, and Iraq continues to depend upon imports for nearly all of its vegetable oil consumption.

**Livestock production**—Livestock contribute 56 percent of the value of total agricultural output. Sheep and goats continue to be the most important source of meat and milk followed by poultry, cattle, and camels. Most of the sheep and goats are owned by small farmers and a declining nomad population. The animals are grazed on the extensive pastures of the north and on the seasonal pastures that are available in some areas of the south during the winter. In the past few years, Government programs to provide improved breeds of sheep and goats and limited subsidy programs have contributed to a slight increase in production of these animals.

Meat production increased about 10 percent annually during the past decade. Most of this increase came from the rapid expansion in poultry production. Poultry meat accounted for 33 percent of total meat output by 1980, compared to only 12 percent in 1970. Most of the poultry is produced by cooperatives with the aid of extensive Government subsidies for feed and machinery. Extensive investment in the dairy industry has expanded milk output by 5 percent annually since 1975.

**Food processing**—The food processing industry is developing slowly despite Government efforts to encourage its growth. Much of the industry's technology is outdated, and war conditions since late 1980 have made it difficult to attract foreign contractors. Vegetable processing is not very extensive, but Iraq would like to establish more local canneries and to encourage farmers to grow cannery vegetables. There is some fruit processing in northern Iraq, where small operations can peaches and apricots. Date processing under the Iraq Date Administration is the most innovative of the food processing industries and an extensive line of date products is now being produced. Juice bottling plants have expanded; Pepsi-Cola and other soft drinks are now being produced domestically.

**Future agricultural production**—Iraq invests about \$1 billion annually in its agricultural sector, which employs about 40 percent of the population. The Government's

foremost objective is to increase agricultural productivity which has declined since the late fifties as a result of political instability in the countryside, and as a result of tremendous management problems and inefficiencies caused by extensive Government involvement in the agricultural sector. Since the late seventies, Iraq has tried to increase productivity by shifting from socialist policies that emphasized collectivized and cooperative agricultural production units to an increasingly free enterprise policy. Much of the agricultural investment during the past 5 years has been aimed at increasing farmers' incentives, both by offering more attractive producer prices and by introducing wage incentives in the cooperatives.

Major investments in irrigation and in efforts to combat soil salinity in the irrigated southern region should contribute to expanded wheat, corn, and vegetable production. Three major projects presently underway are the 315,000-ha project near Kirkuk in the north, the 280,000-ha Abu Shraib project in central Iraq, and the Kifle-Shenafujah agricultural project along the Euphrates.

Increased subsidies for planting apple and peach orchards and vineyards have already raised production well above the 1975 level. A state-organized cooperative in the north for deciduous crops should contribute to a doubling of deciduous fruit production by 1985.

## Iran

Iran was proclaimed an Islamic republic in 1979. The new constitution codifies Islamic principles of government. The leader of the revolution, Ayatollah ol-Ozma Khomeini, provides general guidance for the Government, which is divided into executive, legislative, and judicial branches. Suffrage is universal over age 18, and elections have been held for president and parliament since the revolution. The main political party is the Islamic Republic Party, but opposition is provided by the Tudeh Party, and other political pressure is offered by Communist sympathizers, armed political groups, ethnic minorities, and local leaders and Islamic committees who enforce their political beliefs through armed militia.

## Population and Employment

Iran's population was estimated at 41.2 million in 1982. The ethnic divisions are roughly 63 percent Persians, 18 percent Turkic, 13 percent other Iranians, 3 percent Kurds, and 3 percent Arabs and other Semitic peoples. The population is overwhelmingly Shia Muslim, at 93 percent. The average annual population growth rate is estimated at 2.9 percent.

Iran's urban population was 50 percent of the total in 1980, increasing at a rate of 4.9 percent per year from 1970 to 1980. The labor force of about 12.0 million (1979) is primarily employed in agriculture (33 percent) and manufacturing (21 percent). There is an acute shortage of skilled labor in Iran.

## Investment and Planning

Private investment has declined sharply in Iran because of recent events. Many private investors who were wealthy in the late seventies fled the country, some of them carrying large sums of cash and leaving behind large debts. Government dominance of the economy has increased markedly since the war with Iraq began. The Government sector includes all large industries, notably petroleum, motor vehicles, and steel. The Iranian Tobacco Company was one of the older public firms which handles manufacture of tobacco products and purchases from farmers. The Government now controls foreign trade, banking, insurance, radio, television, newspapers, telegraph services, telephones, airlines, shipping, railroads, and electricity production and distribution. The large dams and irrigation networks were mostly public from the beginning.

Private individuals have been able to shift their resources from trade, manufacturing, and banking to cooperatives,

housing, and farming. The flight of capital from the country has been impeded by the war and strict controls on movement out of Iran overland and by sea.

The most important changes in economic policy concerning farmers were the complete nationalization of banking and foreign trade. Loans are now easier for farmers to obtain for productive purposes through the cooperatives. Food prices are less erratic now than during 1980 and early 1981 because of the expansion of marketing by cooperatives. Farmers have an assured market for their products through these cooperatives.

Investments in irrigation facilities and farm machinery have increased because loans are easier to obtain and also because farmers are guaranteed access to markets through purchase arrangements with cooperatives. A number of projects to bolster production of livestock products and vegetables are financed by the nationalized banks through the cooperatives. Mullahs and wealthy private individuals sometimes clash over who will dominate the coops. This often is the last retreat and the only opportunity left to private individuals wishing to make a considerable sum of money.

Cooperatives and cooperative companies are designated for a major role in food production, storage, processing, marketing, and preparing for export. The infusion of funds from public banks to the cooperatives will depend upon how well the exports of petroleum can be revived and how much foreign exchange is available for essential imports. As of mid-1982, Iran had revived its petroleum output considerably. Abandoned farms and factories previously owned by wealthy individuals will be taken over by cooperatives or public firms.

## Oil Production and Reserves in Iran

The Islamic revolution and the war with Iraq profoundly disrupted oil production in Iran. This disruption was compounded by the world oil glut in 1981-82, which was particularly difficult for Iran because it had become dependent on short-term contracts and the spot market.

In February 1979, the revolutionary council set a production target of 4 mmb/d for 1980. Actual production, however, averaged less than 1.7 mmb/d in that year. The outbreak of war with Iraq in September 1980 briefly forced production down to the 600-800 mb/d range, but once the war settled into a state-mate, production regained the former post-revolution average, which was still far below capacity.

Iranian oil exports, mainly on short-term contracts and on the spot market, fell from the 900 mb/d range by September 1981 as world demand slackened off. Iran also had to negotiate lower prices for its oil, with consequent negative effects on the Iranian economy. Iran even had to sell off a portion of its gold reserves. A rush of uncontrolled imports costing the economy \$1.5 billion a month between mid-March and mid-October 1981 placed particularly heavy strains on the central bank. Oil exports were accelerated during 1982, to a level of about 2.5 mmb/d.

Before the revolution, Iran had embarked on an ambitious program to develop its estimated reserves of 400 bcf of natural gas. This program included the planned sale of natural gas by pipeline to the USSR and European countries, but it has since been disrupted.

## Agricultural Sector

The agricultural sector includes several distinct farm groups. The predominant groups are small family farms, cooperatives and farm corporations, and large commercial farms and agribusiness operations. Small, subsistence farms are the most numerous, numbering about 2.5 million and supporting 80 percent of the agricultural population in 1980. Most small farmers were tenants or sharecroppers who gained title to their land as a result of an extensive land reform program implemented in the late fifties. But, since then, they have benefited little from the country's new petroleum wealth. Small farms average 4 ha. Only about 25 percent of them are irrigated, usually only two or three times per year.

Cooperative farms are owned collectively by farmers, while farm corporations employ farmers as wage earners. Both types of farms were organized in conjunction with the land reform program in order to consolidate small holdings and to provide farmers with credit, inputs, services, and consumer goods. The organization of farm corporations and cooperatives was never extensive or effective, however. Cooperatives, which are more widespread than



farm corporations, were estimated to produce less than 1 percent of Iran's marketed agricultural surplus in 1975.

The commercial sector includes large private farms and agribusiness projects. Privately owned farms account for about 20 percent of Iranian farmers and 70 percent of the cultivated land area. Many of the agribusiness projects have involved development of new cropland through construction of irrigation facilities. Under the Shah, the Government followed a policy of creating most agricultural incentives and subsidies for the commercial sector in an effort to increase the country's marketable surplus of agricultural produce as quickly as possible. Development policies favoring the commercial farm sector have served to reinforce the sharp difference in the level of technology employed by small farms and by commercial farms and agribusinesses. Small farm production continues to depend upon traditional cultivation methods whereas the commercial farm sector presently accounts for most of the country's fertilizer use and mechanization.

Expansion of agricultural production critically depends on improvements in irrigation facilities. In the early seventies, construction of dams and irrigation networks became an important agricultural investment program. About 3.6 million ha were equipped for some type of irrigation by 1980. However, only about 20 percent of the irrigated farmland received adequate supplies of water, mostly from wells. The remaining areas received only inadequate seasonal supplies, and only about 350,000 ha used water stored in dams. Construction of tertiary irrigation networks that would tap more water from the large dam complexes remains largely incomplete.

Transportation facilities in Iran improved continuously until 1979. All major population centers were linked by rail or by all-weather roads. Several thousand feeder roads were constructed to link rural villages and open up agricultural areas. Since the revolution, many of these roads have deteriorated, contributing to problems in distribution of inputs and evacuation of farm produce. Road transportation is the major means of transporting agricultural produce, and seasonal shortages of truck capacity are common. Rail transport is fairly important for products such as grains and sugar.

**Crop production**—Wheat and barley are the principal grain crops grown in Iran, together accounting for about 75 percent of the land in crops and 40 percent of the value of all crop production. Wheat acreage doubled between 1960 and 1980 as a result of subsidies that have been continued under the new Islamic Government. Some progress has also been made in increasing yields through the use of improved cultivation practices.

Other major food crops include fruits and nuts, vegetables, beet and cane sugar, and some oilseeds. A wide variety of fruit is grown throughout Iran. Grapes, dates, and apricots are the most valuable because of the importance of the dried fruit industry in the national program to expand

non-oil exports. Iran produces about 30 varieties of grapes. An increasing proportion is dried and the rest is used for fresh consumption, sugar, juice, and wine. The primary grape producing areas are east and west of Lake Urmia, northwest of Tehran, Hamaden, and west of Mished. Grape production has changed little in the past 30 years.

Oranges represent the bulk of total citrus output. Most oranges and tangerines are produced along the Caspian coast and some are grown in the low valleys in the inland southern belt. Peaches and apricots are produced in every region with greatest concentration in the eastern Azarbaijan and Khursan. Many new fruit orchards were planted in the sixties in order to qualify for exemptions from the land reform act. These trees should now be producing and a substantial expansion in fruit production is expected.

Iran's nut production is made up primarily of pistachios, almonds, and walnuts. Among the edible nuts produced, only pistachios are scheduled for production expansion because of Government investment in the pistachio industry during the fifth 5-year development plan, 1973-78, which involved orchard development in the Rafsanjan-Kerman region.

Iran produces a wide variety of vegetables. Approximately 33 percent of all fresh vegetables are grown under rainfed conditions in the northern coastal plain region, and substantial amounts of onions, tomatoes, and potatoes are grown under irrigation.

Iran produces beet and cane sugar. Sugar beets, an irrigated crop grown on small farms, account for 90 percent of total sugar production. Sugar beet and sugar cane production have almost doubled in the past decade in response to a skyrocketing demand for sugar, attractive Government incentives, and promotion by cooperatives and other private organizations. Although sugar beet production remains largely a small farm enterprise, development plans in the midseventies called for increased mechanization of sugar beet harvesting. In 1976, there were 31 beet factories in Iran with three under construction and two plants capable of refining raw sugar.

**Livestock production**—Development of the poultry and dairy industries has been in the forefront of Iranian agricultural development. Feed subsidies and favorable price supports have encouraged a spectacular expansion in poultry meat production that reached 15 to 20 percent per year throughout the seventies. Large, modern poultry operations, many of them constructed as joint ventures with foreign agribusiness firms, provided most of the poultry meat and eggs consumed in urban areas. Recently, however, the poultry industry has experienced serious disruptions stemming from disease, feed and energy shortages, and reduced subsidies.

Statistics on total meat production, which includes mainly poultry, beef, and mutton, are often contradictory. However, the meat industry in 1980 was still not fully modernized despite extensive construction of feedlots and slaugh-



terhouses during the seventies. Iran continues to depend on substantial imports of up to 25 percent of its meat consumption. Imports of Holstein cattle have upgraded Iranian dairy herds. Construction of many large, modern dairies and pasteurization plants increased milk production by about 31 percent between 1974 and 1978, although a decline occurred in the following 2 years.

Sheep continue to be the most important animals and mutton the most heavily consumed red meat in Iran. Most sheep and goats are kept by a declining nomadic population and by small farmers who produce milk and meat for local consumption. Most of the animals are grazed on seasonal pastures. Sheep are raised for meat, wool, skins, and milk. Goats are raised for milk and, to a lesser extent, meat.

**Food processing**—Major growth areas in Iran's food processing industry are dairy, poultry, vegetable oil refining, and biscuit manufacture. By 1976, 28 state-organized businesses had been established in rural areas for meat processing, canning, and grain and feed milling. In 1977, 315 flour mills were in operation, producing 2,000-4,000 tons per day; 7 mills were under construction. However, most of the processing plants in Iran are small scale and inefficient.

**Future agricultural production**—Iran's agricultural production has been severely disrupted by the revolution. However, while little concrete information on current production and agricultural planning is available, there is

likely to be some continuity between recent production trends and planning objectives under the Shah and under the new Islamic Government.

Under the most recent plan, the 5-year development plan for 1973-78, the former government aimed for an increase in production to achieve an 80-percent self-sufficiency level. This was an extremely ambitious objective which was never achieved. The plan also called for increased rural incomes in order to offset the growing income disparity between rural and urban areas. These objectives were to be accomplished through an increase in Government investment in the agricultural sector to \$4.5 billion, 5.8 times the previous plan's allocation. Most of the investment was planned for the commercial and cooperative farm sectors. The plan provided for increased producer subsidies; expansion in the size of production units by organizing farm corporations, cooperatives and joint ventures; and continued investment in irrigation.

No information is currently available on comprehensive agricultural plans by the Islamic Government. However, scattered reports indicate that the Government has ordered an increase in wheat and barley acreage and that it has continued producer subsidies for seed and fertilizer. The Government plans to continue operating agro-industrial businesses, most of which produce poultry and dairy products, sugar beets, cotton, and soybeans. However, it is likely that the current political and economic instability will exacerbate the management and supply problems that these large operations experienced throughout the seventies.

## Chapter 3—Agricultural Import Trends, Policies, and Procedures

Liberalization of food import policies and improvements in port handling and distribution capabilities have contributed to the tremendous increase in the volume and diversity of food imports of the eight study countries. Government policies are evolving to encourage greater food imports and to improve the organization and handling of imports.

With the recent exception of Iran, all of the countries in the region have improved diets; low consumer prices are a major policy objective. Subsidies on staple foods allow consumers to pay well below world prices for imported commodities such as wheat, flour, bread, rice, vegetable oils, and tomato paste. In the Gulf states of Saudi Arabia, Qatar, and the UAE, subsidies are provided not only to consumers, but also to private importers and distributors in an effort to encourage development of the private food sector.

In order to ensure sufficient imports to meet consumer demand, all the Middle East and North Africa OPEC countries have liberalized food import controls. In Saudi Arabia, Qatar, and the UAE, food imports are handled by the private sector and the quantity of imports is determined by market demand (table 5). Import duties are very low, there are no foreign exchange controls, and import regulations are few. Kuwait allows private importers to trade freely but they find it difficult to compete with the price of subsidized items imported by the Kuwait Supply Company. In Algeria, Iraq, and Libya, food imports are controlled or

handled by the government or cooperatives. However, the actual import controls in these countries are quite liberal and can readily be adjusted to accommodate increased consumer demand for food.

Revolution and war in Iran caused disruptions in food imports and import distribution during 1979-81. Sporadic shortages have made necessary the rationing of staple foods, but food subsidies remain substantial, especially for cereals. After the advent of the Islamic Republic, the Government increased its role in controlling and handling food imports. Certain luxury food imports (such as bakery products, jam, and special canned foods) have been banned since 1979, but restrictions on the imports of most other foods have eased since 1980. Imports of butter and cheese continue to soar.

The ability of the region to handle importing, storing, processing, and distributing of food has been increasing steadily. All of the countries have invested in modernization and expansion of ports, and improvements in road and railway systems. Refrigeration capacity in homes, stores, and warehouses is increasing. The number of supermarkets and state-run distribution centers is growing rapidly.

Import policy, import organization, and the distribution of food imports in each country are discussed in this chapter. The discussion of food and import policies includes consideration of national objectives, regulations, and domestic food policies such as subsidies that have an effect on food imports. The organization and operation of each country's public and/or private food sectors are described in the section on the organization of food importation and distribution.

### Algeria

Algerian trade policy has begun to turn toward a greater diversification in the country's sources of imports. Algeria's major trading partner is France, which supplies over 60 percent of its total imports and nearly 30 percent of agricultural imports. Canada, which provided 8 percent of Algeria's food imports in 1980, and Eastern Europe, Brazil, Scandinavia, and Argentina are other major agricultural suppliers.

The U.S. market share in Algeria's agricultural imports declined from almost 21 percent in 1974 to 8 percent in 1978 and has remained below 10 percent since then (table 6).

Table 5—Food import controls: Eight study countries

Country	Quantity of food imports is controlled	Food subsidies provided for staple imported foods	Public agencies dominate or monopolize food imports	Private sector active in food imports
Algeria	X <sup>1</sup>	X	X	
Iran		X	X	X
Iraq	X	X	X	
Kuwait		X	X	X
Libya	X	X	X	
Qatar		X		X
Saudi Arabia		X		X
UAE		X		X

<sup>1</sup>X indicates presence of control.

Source: U.S. Dept. Agr., Econ. Res. Serv.

Potential exists for expanding U.S. exports to Algeria, however, because of Algerian interest in achieving balanced bilateral trade with its partners. This policy may give an advantage to U.S. exporters because of the U.S. role as the major purchaser of Algerian oil. The United States purchased over half of Algeria's petroleum exports in 1979 and is the only major trading partner that has a deficit with Algeria, a deficit which doubled between 1978 and 1980 to \$6 billion.

## Trade Policies

Algeria's war of national liberation was followed by 15 years of enforced austerity. Following the Soviet model of economic development, the Government sacrificed housing, social infrastructure, and the provision of consumer goods in favor of investment in capital equipment and heavy industry, particularly in the petrochemicals sector.

Private consumption rose at a slower rate than public consumption through 1977.<sup>7</sup> In 1978, there were demonstrations against a 35-percent increase in food prices and sharply increased housing costs. In December 1978, President Houari Boumedienne died; the death of the man who had led Algeria since 1965 marked a turning point in fundamental economic policy. The Congress of the NLF met in Algiers in February 1979 to elect Col. Chadli Bendjedid president and declared, "Most of us are socialists, but we like to live well." Bendjedid himself declared that he put the emphasis on "improving the daily needs of the citizens."

Food imports grew at an annual rate of from 10 to 12 percent between 1973 and 1978, in part because of lagging

<sup>7</sup>World Bank, *Algeria: Recent Economic Developments and Prospects*, Report No. 3018-AL (Washington, D.C., Oct. 3, 1980), p. 4.

Table 6—Agricultural imports of the eight study countries: U.S. share

Country	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983 <sup>1</sup>
<i>Million dollars</i>											
Agricultural imports from United States											
Algeria	71.2	170.5	216.3	112.1	139.7	143.5	125.5	175.6	290.9	158.3	285.0
Libya	6.4	26.0	11.6	11.6	16.6	12.9	18.4	14.6	14.1	11.7	12.0
Saudi Arabia	65.5	110.0	117.1	165.0	171.1	315.3	325.5	375.4	465.6	486.4	590.0
United Arab Emirates	3.6	6.1	9.2	13.2	12.5	30.9	43.8	113.7	59.4	56.1	75.0
Qatar	0.4	1.6	1.0	1.5	1.6	5.4	3.0	5.4	5.3	5.9	7.0
Kuwait	8.7	21.3	10.1	12.9	15.9	20.6	22.7	47.3	60.5	36.1	50.0
Iraq	32.4	114.8	86.0	61.3	62.8	139.4	146.0	255.3	125.2	132.1	430.0
Iran	108.9	534.2	423.2	238.5	423.2	492.9	415.1	8.2	247.6	24.7	22.0
Total	297.3	984.5	874.5	616.1	843.4	1,160.9	1,100.0	995.5	1,268.6	911.3	1,471.0
Agricultural imports from world:											
Algeria	383.3	822.9	1,329.3	974.4	1,220.4	1,780.0	1,633.9	2,450.0	3,105.0	3,300.0	3,700.0
Libya	373.2	475.0	609.4	469.3	578.7	582.3	893.0	1,103.1	1,250.0	1,480.0	1,700.0
Saudi Arabia	429.1	561.8	615.0	995.0	1,522.4	2,026.0	3,087.9	4,400.0	5,970.0	6,700.0	7,500.0
United Arab Emirates	99.0	197.4	305.0	440.0	520.0	685.0	930.0	1,330.0	1,200.0	1,260.0	1,300.0
Qatar	37.2	60.9	57.1	83.9	88.0	102.4	167.2	163.0	200.0	243.0	270.0
Kuwait	209.6	276.1	408.9	475.4	574.4	629.8	798.1	898.3	1,310.0	1,490.0	1,600.0
Iraq	224.9	704.1	776.6	591.6	755.7	1,039.0	1,378.9	1,978.0	2,092.0	2,600.0	3,550.0
Iran	429.2	1,270.7	1,996.2	1,497.8	2,026.0	2,465.0	2,128.0	2,775.2	3,473.0	4,285.0	4,930.0
Total	2,185.5	4,368.9	6,097.5	5,527.4	7,286.4	9,339.5	11,017.0	15,097.6	18,600.0	21,358.0	24,550.0
<i>Percent</i>											
U.S. share:											
Algeria	18.6	20.7	16.3	11.5	11.5	8.1	7.7	7.2	9.4	4.8	7.7
Libya	1.7	5.5	1.9	2.0	2.9	1.8	2.1	1.3	1.1	.9	.7
Saudi Arabia	15.3	19.6	19.0	16.6	11.2	15.6	10.5	8.5	7.8	7.3	7.9
United Arab Emirates	3.6	3.1	3.0	3.0	2.4	4.5	4.7	8.5	5.0	4.5	5.8
Qatar	1.0	2.6	1.8	1.8	1.8	5.2	1.8	3.3	2.7	2.4	2.6
Kuwait	4.2	7.7	2.5	2.7	2.8	3.3	2.8	5.3	4.6	2.7	3.1
Iraq	14.4	16.2	11.0	9.3	8.4	13.4	10.6	12.9	6.0	5.1	8.1
Iran	25.4	42.4	21.2	15.9	20.9	20.0	19.5	.3	7.1	.6	.4
Total	13.6	22.5	14.3	11.1	11.6	12.4	10.0	6.6	6.8	4.3	6.0

<sup>1</sup>Estimate.

Sources: FAO, *Trade Yearbook*, 1980, and matrix table for shipment by trading partner developed by U.S. Dept. Agr., Econ. Res. Serv.



domestic food production. In 1969, domestic food production had supplied 90 percent of total food consumption; by 1977, this proportion had fallen to 40 percent and continued to decline.

Food imports increased 44 percent in 1980, reflecting in part Algeria's 46-percent increase in revenues from petroleum sales. Nevertheless, Algeria registered a balance of payments surplus in that year for the first time since 1974. Policy measures adopted since 1980 have included a doubling of consumer food subsidies, an increase of 25 percent in nonagricultural wages, and a reduction in taxes.

## **Food Subsidies**

Food subsidies permitting consumers to buy staple foods at below world prices act as a spur to growing food imports. Algeria has subsidized the retail prices of staple foods, notably bread, couscous, oils, and fats, for more than 10 years. The price of bread, for example, at 22 cents per pound, has remained unchanged since the sixties. Prices of nonbasic foods such as coffee, sugar, fruits, and vegetables are permitted to vary but have fixed profit margins.

The cost of subsidies has soared as inflation has increased. In 1979, about \$225 million was budgeted for subsidies. The budget allocation for food subsidies reached \$486 million in 1980, representing an increase from 4 to 6 percent of the country's budget. Although the inflation rate in Algeria was about 20 percent in 1979, staple foods were insulated from any price increase.

Prices of imported foods are set by the National Price Committee composed of representatives from various Government ministries. Imported foods are subsidized by extending bank credit to cover any losses incurred by public importing agencies. Budgetary subsidies cover the difference between retail and producer prices for food produced domestically.

## **Food Import Organization and Distribution**

All food imports came under Government control in 1978 as part of the socialist attempt to rationalize economic planning and administration. This legacy is still very much a reality, in spite of recent steps to liberalize the economy. Over 20 state agencies hold monopolies for imports of various items. Agricultural import monopolies are held by the Algerian grains office (OAIC), which is responsible for all cereal imports and exports, and by the national marketing office (ONACO), which is responsible for a wide range of other agricultural products such as meats and olive oil.

OAIC has responsibility for distributing cereals to another state firm, SN SEMPAC, which has a monopoly on the manufacture of flour, semolina, pasta, and couscous. SN SEMPAC was established in 1964 with nationalization of the milling sector and was made responsible for milling both domestic and imported cereals. In 1980, SN SEMPAC

controlled 109 production units, including 63 flour mills, 14 pasta factories, 3 industrial couscous factories, 9 biscuit factories, 1 rice mill, and 1 barley mill. The current 5-year plan (1980-1984) provides for expansion of SN SEMPAC, although at a slower pace than in the seventies. Processing and sale of foods, oils, and fats is handled by the state firm SOGEDIA.

The Algerian Government's progressive monopolization of food importation and distribution has been implemented under legislation entitled Global Import Authorizations (AGI) which assigns responsibilities for the import of every commodity. The AGI assigns three categories of trade. The first is the AGI monopoly which gives monopoly import rights for specific commodities to a state enterprise. Foodstuffs are included in this category. The second category of trade is the AGI internal production authorization issued to private firms to allow them to handle directly imports of goods needed for their own production. The third type is the AGI investment authorization issued to private firms to allow them to import goods needed for their own investment. Of imports totaling \$8.1 billion in 1979, \$3.9 billion were imported under monopoly authorizations, \$2.1 billion under production authorizations, and \$2.1 billion under investment authorizations.

While the Government has been increasing its role in foreign trade, it is also making an effort to simplify and decentralize import procedures and regulations to facilitate investment and production based on imports. In 1980, the Government moved to increase the role of private firms, under authorization from the Government, in handling their own trade. One production authorization is now granted automatically to each firm. Subject to restrictions intended to limit importation of luxury goods, firms are permitted to substitute among commodities within the ceilings set by their authorization.

Each Government agency has its own procurement office with responsibility for importing authorized quantities of a specific commodity. These offices issue hundreds of international tenders annually, usually publishing them in leading newspapers. Provincial and municipal governments also issue their own tenders. Potential exporters are expected to respond directly to the appropriate agency since the Government prohibits the use of an agent or intermediaries.

Several of the state companies market their goods through their own wholesale and retail outlets. ONACO is the dominant state agency in wholesaling and distributing. It is the exclusive wholesaler for SOGEDIA and many other state enterprises. SN SEMPAC distributes its production through a system of 195 sales depots. There is at least one depot in each state with a storage capacity to meet 1 month's demand. These depots supply flour and other products to bakers and retailers.

Most retail food trade was still handled by the private sector by the end of the seventies. Twenty new state-owned

supermarkets were being established in 1980 in metropolitan areas. In rural areas, surplus agricultural products are still sold in small weekly markets, or souks, by small traders.

Transport for food importation and distribution is improving. Algeria has devoted substantial resources to the expansion of its nine major ports. Most food imports enter through Algiers; the other ports specialize in petroleum and industrial shipments.

## Libya

The direction of Libyan trade is politically determined. Libya prefers to import from socialist countries and from countries contributing to Libyan development, particularly Italy, Turkey, and Pakistan. Libya also attempts to achieve balanced bilateral trade and thus prefers to import from its major oil customers. The U.S. share of Libya's food imports has been very low, averaging about 2 percent per year since 1975 (table 6). But, despite political disadvantages, U.S. exports could do well in the Libyan market on the basis of their quality and reliability. Marketing in Libya is difficult because of the continuing socialist reorganization of the country's economy. Private agents and representatives are necessary to advise on business practices and to assist in administering contracts. Furthermore, current U.S. policies toward Libya are not favorable for development of trade.

Growth in private consumption averaged 18.7 percent annually between 1970 and 1978. Food imports, spurred by rising incomes, grew at an average rate of 13 percent between 1974 and 1979 and currently account for 60 percent of the country's food consumption.

### Food Subsidies

Like many of the oil exporting countries in this region, Libya has policies and programs relating to food self-sufficiency. This concept refers to cereals more than to processed foods, sugar, tea, and specialty items. The Government expects food imports to decrease by 10 percent by the end of the 1981-85 national plan. This decrease hinges on realizing very optimistic projections of growth in domestic agricultural production. Even if these targets are achieved, population growth and income growth are likely to exert a continuing upward pressure on food imports.

Growth in Libya's food imports has also been spurred by the country's socialist policies, which have generated massive transfers of wealth to the population in the form of subsidies, services, and various benefit programs. Most basic food items are subsidized, including meat, wheat flour, semolina, barley, rice, sugar, tea, olive oil, and tomatoes.

Estimates of the cost of these subsidies vary because many things are subsidized in Libya and different estimates may include different subsidies. Consumer food subsidies were estimated at \$270 million for a 1976 population of 2

## Food Import Organization and Distribution

The socialist transformation of Libya's economy has brought massive changes in food importing, wholesaling, and retailing. Objectives of these changes are to eliminate the costs and profits of middlemen and traders and to reduce consumer costs by nationalizing the entire marketing process.

Import trade was nationalized in 1978. The licensing system that previously applied to both public and private importers was replaced by an annual national planning procedure under the Economy Secretariat. State trading companies are now responsible for all imports. Under the new procedures, all state trading companies submit a plan to the secretariat each November giving estimates of the necessary import levels and an import schedule. The secretariat reviews the plan, issues permits, and directs the trading company toward the quality, quantity, and market for each commodity. The Economy Secretariat has the authority to grant increases whenever consumption exceeds import allocations. These increases have usually been granted quite readily.

The major trading companies for agricultural imports are the General Establishment for Flour, Milling, and Fodder; the National Foodstuff Import, Export, and Manufacturing Company; the General Establishment for Dairy Products; and the National Meat and Livestock Establishment.

The Central Price Committee within the Economy Secretariat sets all wholesale prices. Subsidies are provided through the National Commodity Supply Organization which wholesales most basic food items. Retail prices are specified by markups of wholesale prices plus costs of transport. Prices of goods not subsidized are often determined on the basis of recommendations by local people's committees.

Private wholesale and retail trade is gradually being replaced by public marketing institutions, although some private retailers are being allowed to stay on in their shops, selling goods owned and supplied by public agencies. A program was initiated in 1979 to build and operate public supermarkets which are large-scale discount stores offering a wide variety of items at a price just covering costs. Libya plans to set up 230 of these markets to replace small privately owned shops. Five giant markets have been planned in the major cities of Tripoli and Benghazi.

Libya has invested large sums in the development of its ports and transportation system. Six of its seven ports are undergoing modernization. Trucks are the principal means of internal transport. However, the transport industry is not efficient and distribution problems cause sporadic shortages of foodstuffs.

## Saudi Arabia

While Saudi Arabia never formally joined the Arab Common Market, it did grant some duty concessions to Egypt,



Syria, Jordan, Iraq, and Lebanon. These concessions helped Syria and Jordan to increase exports of processed foods and beverages to Saudi Arabia. Saudi Arabia also allows virtually all food products from other countries of the Arabian Peninsula to enter duty free if they are indigenous products. This has enabled Ra's al Khaymah of the UAE to become a major supplier of Saudi imports of drinking water. Qatar has become a major seasonal exporter of duty-free, fresh vegetables to Saudi Arabia.

The U.S. share of Saudi imports of agricultural commodities has fallen from 24 percent in 1974 to less than 10 percent. This is partly due to the attitudes of American exporters toward the small volume of most food orders in the Saudi Arabian market (table 6). Traders from Europe and Latin America were willing to service small orders in order to establish a foothold in a booming market, whose value increased by an astounding 1,600 percent between 1972 and 1980. Also, other countries are able to offer lower prices for many products. Export subsidies for items such as frozen poultry from the EC and Brazil helped them boost their sales to Saudi Arabia.

Because of the expansion of the market, U.S. agricultural exports to Saudi Arabia rose to about \$480 million in 1982. U.S. sales of rice to Saudi Arabia showed a marked increase, and shipments of poultry meat, eggs, frozen vegetables, and many processed foods are also expanding. New port facilities in Saudi Arabia together with the larger volume of purchases by larger supermarkets should improve prospects for U.S. sales.

One way for American firms to expand their sales in Saudi Arabia is to establish a partnership with a Saudi firm that will act as the exclusive agent for their brands. This means that the Saudi firm will place new orders automatically as the American brand is sold out in grocery stores. Or, U.S. exporters can contact the price and quality research offices that some large Saudi trading firms have set up in the United States and Europe. Government subsidies for these offices depend upon how much their purchases contribute to maintaining reasonable food prices for consumers in Saudi Arabia. It is very expensive to station an American business representative in Saudi Arabia. The cost per permanent U.S. salesperson usually exceeds \$200,000 annually.

Sharia, Moslem law based upon the Koran, is the supreme law of Saudi Arabia. U.S. business representatives should be familiar with Saudi law and customs before exploring this market.

## Trade Policies

Saudi Arabia has a liberal agricultural trade policy designed to assure adequate food supplies and to keep retail food prices low through the use of generous import subsidy payments. Licenses are not required for any imports, tariffs are 0 to 3 percent *ad valorem*, and there are few trade restrictions. While imports of alcohol and pork are generally forbidden, these products are sometimes

imported for use by Americans and other foreigners in designated foreign enclaves.

## Food Subsidies

Food accounts for about 58 percent of the expenditures of the average urban, middle-income family. The Government is trying to keep retail food prices from rising, and possibly will permit a price decline. To achieve this, Saudi Arabia plans to spend about \$1 billion annually in the early eighties on a combination of food import subsidies and agricultural producer subsidies. In the first 6 months of 1980, Government food subsidies increased 275 percent to \$451 million from \$237 million in 1979.

The greater use of subsidies caused a slight decline of 1.5 percent in retail food prices for urban, middle-income families between the fourth quarter of 1979 and the first quarter of 1980, and kept growth in the consumer price index below 2 percent. Some commodities were even sold below official prices because of oversupply and competition.

Saudi Arabia subsidizes retail food prices by subsidizing the country's private food importers. Importers become eligible to receive import subsidies by agreeing to sell their products within a certain price range.

Saudi Arabia's food imports have also been spurred by the buildup of a strategic reserve. The Government plans to build a 6-month reserve of essential foodstuffs. Grain silos and flour mills have been built in Riyadh, Jiddah, Damman, and Yanbu, each with a capacity of 20,000 tons. More silos are planned.

## Food Import Organization and Distribution

Imports to Saudi Arabia were handled entirely by private traders until the late seventies. Since then, there has been increased participation by public agencies, particularly for wheat and products scheduled for public distribution. Saudi Arabia's strong commitment to private enterprise is likely to keep the role of public agencies limited. Their primary role is to administer subsidies to farmers and consumers.

The Ministry of Commerce is in charge of the subsidy programs for imports, domestic food production, and wholesale and retail trade. Currently, the only public agency playing a major role as an importer is the Grain Silos Organization, which has sole authority for the subsidized importation of wheat. While private wheat imports are not prohibited, they are not competitive with the subsidized public agency. The Grain Silos Organization was formed in part to manage the buildup of national grain stocks. It also operates flour mills, purchases grain from farmers at high support prices, and distributes flour to bakers at low prices. Private importers continue to account for some wheat and most of the other food imports. Four large firms in Jiddah and several traders in Damman usu-



ally account for more than half the country's total food imports.

Saudi private traders have become the most prosperous in the Middle East over the past decade. Soaring import demand and the favorable subsidy and loan programs have enabled them to take over the share of the Saudi market once held by traders and wholesalers from nearby countries, particularly the re-exporters and distributors of Kuwait and Lebanon. The leading trading firms usually consist of a partnership of family members having excellent connections with banks, Government officials, and the royal family. These private firms are increasingly combining trade activities with agribusiness operations and supermarket outlets in order to capture the full benefits of available subsidies. For example, subsidized travel on behalf of agribusiness operations can also be used to transact business for a firm's trading operations.

Catering firms are large importers of food. Some firms have contracts to provide meals for workers on large construction projects. Some American and European hotel chains have subsidiaries in Saudi Arabia for food catering. The U.S. Army Corps of Engineers is a major food importer and several other U.S. Government agencies have their own commissaries. U.S. shipments to these agencies are usually not counted as exports by the Bureau of the Census or as an import by Saudi customs. Aramco is also a major food importer and its purchases are counted in trade data.

Wholesale and retail businesses can be owned only by Saudi citizens, although most of the supermarkets are managed by foreigners. The Ministry of Commerce pays subsidies to retailers who agree to sell their food within established price guidelines; penalties are imposed for excessive profiteering in food marketing. Because many of the major supermarkets are able to take fuller advantage of subsidies, their market share has increased while that of the small grocery markets has declined. Competition among a greater number of supermarkets has also contributed to lower food prices. Most grocery stores now have modern refrigeration facilities. This has helped Saudi consumers to improve and diversify their diets.

Modern port facilities for unloading containers have been built at Jiddah, Yanbu, Jubail, and Damman. Large facilities for holding and feeding live animals have recently been built at Jiddah. All warehouses in port areas are now owned by the Saudi Government; the fee for handling cargo is 1 percent of the invoice value. Private firms are encouraged by interest-free loans to build additional food storage facilities.

## United Arab Emirates

No restrictions are placed on the choice of UAE's trading partners, except for prohibition of trade with Israel and South Africa. Even this regulation is avoided by ordering Israeli items in Jordan and South African products in Swaziland and Botswana. The UAE participates in the

Arab boycott of U.S. firms trading with Israel, but the extent to which the boycott is observed varies widely by firm.

The U.S. share of agricultural exports to the UAE has been increasing steadily until recently, more than tripling between 1977 and 1980 due to the boom in Dubai's transit trade to Iran (table 6). The UAE has become a significant new market for U.S. apples and there is an excellent market potential for increased food sales as population and incomes increase. Successful entry of American firms into this highly competitive market will depend on competitive pricing and a reputation for reliability.

Business is carried out on an informal basis. Personal contact and a good reputation are extremely important in this context. Many foreign exporting firms find it helpful to operate through local agents familiar with the local business community and customs. For this reason, and also because import regulations are currently undergoing revision, foreign firms should exercise care in choosing a licensed and reputable agent.

The UAE is a federation of seven emirates, each with policymaking autonomy. Import policies and regulations differ in each emirate, although efforts are now underway to develop a uniform federal code. Import regulations are few; such a free trade policy has enabled the UAE to replace Kuwait and Bahrain as the region's leading transit center for food.

The UAE's few import regulations cover pork, alcohol, and the use of agents and import licenses. The UAE allows imports of alcoholic beverages and pork products only if they are sold to non-Muslim consumers. This liberal policy has made Dubai one of the major transshipment points for beer in the Gulf region.

Dubai, with almost half of the UAE's population, has traditionally played an important role in the Gulf region's transit trade. Over 40 percent of food imports to Dubai were sold to traders or consumers from outside the UAE in 1980. Re-exports of all items from Dubai are worth over \$1 billion annually, and the emirate has invested over \$1.5 billion in modern ports capable of handling this growing trade. While Dubai's regional role is strong, its role as food distributor to the other six emirates has declined as new port facilities and improved food distribution systems in the emirates of Abu Dhabi and Sharjah increased their own food trade.

The use of local agents is an important policy on which the individual emirates differ. Abu Dhabi has a more restrictive policy in this regard than the other emirates. Foreign companies wishing to export to Abu Dhabi are required to use a local agent who is a native born Abu Dhabian. Trading firms wishing to open an office in Abu Dhabi must do so through a joint venture with at least 51 percent owned by local interests. In addition, all food items imported into Abu Dhabi must carry labels stating the name and address

of the manufacturer, date of manufacture and expiration, and a list of all contents.

In Dubai and Sharjah, foreign exporting firms are not required to use local agents. However, both foreign and domestic firms must be licensed for all business activities. Licenses are granted by municipal authorities according to recently adopted federal guidelines.

Legislation providing for uniform agency regulations among the emirates has been discussed since 1980. Such new laws would require the use of agents by all foreign firms. All agents would be required to be UAE nationals or represent a company wholly owned by UAE nationals.

**Food Subsidies**

The UAE provides extensive subsidies to reduce retail food prices. Subsidies cover rice, sugar, flour, meat, corn oil and fats, milk, tomato paste, coffee, and cardamom, mostly at the retail level. In 1981, \$500 million was allocated by the federal Government for subsidies on essential commodities.

Subsidies were formerly paid on imports. Many such benefits were enjoyed by foreign purchasers of the UAE's re-exports. Since 1979, a new system of subsidy payments has been implemented by each emirate to prevent this drain on UAE funds. Immigrant workers are not eligible for all food subsidies.

Most food items enter the emirates duty free. Dubai levies a port passage tax of 1-1.5 percent.

**Food Import Organization and Distribution**

The UAE has used its petroleum wealth to encourage development of its private trading sector. Incentives to private traders include free use of modern port facilities, subsidized travel and communication, and subsidized financing for warehouse and grocery store construction. Financing is also widely available for transit trade sales.

Many private firms involved in imports of food in Dubai, Abu Dhabi, and Sharjah continue to operate as family businesses. There is an increasing incidence of trading firms which also own or hold shares in chains of small grocery stores. Foreign exporters using these firms as agents thus have the advantage of automatic access to retail sales in their stores.

Government efforts to establish public companies for grain imports were considerable in the midseventies. The UAE Trading Company imported a large quantity of wheat from Australia in 1977, but by 1979, activities of this company declined sharply and private companies have since accounted for most wheat imports. Subsidies are now provided to the private companies which allow them to sell wheat flour for less than it costs them to produce it from imported wheat.

**Qatar**

Qatar does not discriminate against the United States on food purchases but U.S. products are often considered too expensive. However, U.S. goods do enjoy a reputation for quality and reliability; as the volume of Qatari food imports increases, the U.S. share could increase as well. U.S. rice exports to Qatar increased from 200 tons in 1979 to 6,000 tons in 1980, partly because a Government subsidy paid part of the cost. Qatar's major trading partners are Japan, Great Britain, and West Germany.

**Trade Policies**

Qatar is the smallest of the region's countries in terms of population and market size. Qatar allows most food items to enter the country free of duty or for a low duty of 2 to 4 percent *ad valorem*. There are no restrictions on foreign exchange. All imports from Israel and South Africa are prohibited. Alcoholic beverages and some processed food items are subject to licensing or health regulations.

**Food Subsidies**

Qatar has an extensive subsidy system for food items that provides incentives for the private food importation and distribution sector and maintains low consumer prices for staple foods. New firms entering food distribution or retailing receive subsidies and easy credit terms from the Qatari Government in order to encourage establishment of private firms. Subsidies are also provided for transportation of selected goods; this has facilitated greater use of air freight for products exported from the United States. Certain subsidies, primarily for fresh vegetables, are seasonal. Imports of fresh vegetables are discouraged from January to May when local supplies are generally adequate to meet demand.

Subsidies result in lower prices for consumers on many food items. Rice, wheat flour, vegetable oils, fresh vegetables, meat products, and processed foods are all retailed below cost. The Qatari Government spends an estimated \$15 to \$25 million annually on food subsidies.

**Food Import Organization and Distribution**

Private firms dominate food imports to Qatar and very little Government purchasing is done. Low-interest financing and other Government incentives have created a boom in private construction in the food industry, including warehouse refrigeration facilities, local food processing plants, and modern grocery stores. Private firms in Qatar continue to conduct business in an informal way. Many of the firms consist of a family of businessmen, often related to members of trading firms in nearby Kuwait and Dubai.

A major problem facing importers in Qatar is the high average unit price of imports as a result of the relatively small volume of their purchases. The average import invoice for processed foods, for example, is under \$200,000.



Cooperation with importers in nearby countries to arrange chartered ships for rice or wheat has lowered the unit delivery cost for bulk items. New efforts to pool orders for processed foods are underway.

The Government is an occasional importer of food items. Government purchases of U.S. tomato juice exceeded \$250,000 on one occasion when a major international conference was held in Doha. Government purchases are sometimes made for school lunch programs.

Entry into the Qatari market requires developing personal contacts with local merchants. While Qatari importers are impressed with U.S. products, U.S. exporters have not been as aggressive as other foreign representatives and there is a concern among Qataris that few American exporters ever visit their country. Qataris are interested in American products, and the practice of purchasing something from any foreign trade representative who takes the time to visit the market creates opportunities for increasing the U.S. share of this market.

All foreign firms exporting to Qatar are required to have a local agent who is a Qatar citizen. A trading firm in Qatar can act as the exclusive agent for exporting companies. The trading firm operates by aggregating the orders for the exporter's product from various grocers and placing orders with the exporter on a regular basis. A local agent is also useful for establishing contacts and setting up appointments with the Government agencies involved in purchasing an exporter's product.

Qatar's two ports, Doha and Umm Said, are adequate and delays are infrequent. Some imports are transported by truck from the port of Dubai in the UAE. Qatar's highway transport system is excellent.

## Kuwait

Kuwait's choice of trading partners is determined by price, reliability, and, increasingly, by quality as a result of the increased proportion of food purchased by the Government-operated Kuwait Supply Company (KSC). Kuwait's major supplier of wheat is Australia. Most corn comes from Thailand. Japanese and Latin American foods have gained more favor recently and there has been a shift in the supply of canned food from Eastern Europe to suppliers from the United States, the EC, Brazil, Malaysia, and Australia. U.S. agricultural exports to Kuwait rose only slightly throughout the seventies, but have generally maintained their rather minor share of the market recently (table 6).

## Trade Policies

The primary objective of Kuwait's food import policy is to keep consumer food prices low. There are no restrictions on volume or foreign exchange controls on imports. Most food imports enter duty free or are charged up to 4 percent *ad valorem*. However, a few items such as soft drinks are charged about 10 percent *ad valorem* to protect the devel-

opment of Kuwait's food processing industries. Imports of pork products and alcoholic beverages are prohibited.

The major obstacle to growth in U.S. food exports to Kuwait is the Arab boycott of U.S. firms dealing with Israel, more strictly enforced in Kuwait than in other Arab countries. However, there is significant potential for expanded U.S. trade with Kuwait in their transshipment trade. While re-exports to Saudi Arabia have recently declined, re-exports to Iraq and Iran have increased as a result of disrupted domestic production and destruction of ports in those countries. Most of the cargo unloaded at Shuiaba is loaded on trucks destined for Iraq. Major trade commodities for transshipment are rice, feed grains, and low-perishability processed foods. Transshipment trade gets free handling in Kuwait's excellent modern ports and the Israel boycott restrictions are not rigidly applied.

## Food Subsidies

Retail price subsidies for about a dozen basic commodities in Kuwait are among the highest in the Gulf. Subsidies for rice, wheat flour, and sugar cover up to 60 percent of the final retail cost. Subsidies for cooking oils and lentils cover up to 50 percent of retail costs. Substantial subsidies are also available for corn, powdered milk, and tomato paste.

In part because of the subsidies, the average Kuwaitis spend about 17 percent of their personal income on food and beverages, one of the lowest such proportions in the world. Kuwaiti citizens and long-term foreign residents obtain most of the advantages of the food subsidies; they are issued identification cards enabling them to shop in Government-operated stores. Food prices remain relatively high at restaurants and hotels, and at private grocery stores where most foreign workers must shop. Prices of semiluxury food items are unsubsidized and relatively high.

Despite various regulations, considerable purchases of subsidized rice, sugar, and powdered milk are made in Kuwait by shoppers from Iraq and the Gulf sheikdoms. There has been some reduction in these purchases recently as Iraq and the UAE increase their own food imports.

## Food Import Organization and Distribution

Food imports are dominated by the Kuwait Supply Company, a public agency that administers Kuwait's food subsidy program. KSC handles virtually all of the bulk imports of subsidized foods, including wheat, rice, corn, sugar, and soybean meal. These and other commodities imported by KSC are sold at subsidized prices to franchised retail outlets. KSC has recently expanded its facilities to mill wheat flour, animal feed, and soybean oil and meal. Prices for all of these commodities vary depending on the subsidy funds appropriated by the Government.

The special stores franchised by KSC are usually operated by private managers. Basic foods including rice, sugar, powdered milk, shortening, lentils, and tomato paste are



sold in relatively large volume at prices fixed by KSC. Kuwaiti citizens and some foreign workers with appropriate ration cards are eligible to purchase food in these stores. Other foreign workers and consumers who want to buy food in small quantities shop in private stores.

KSC publishes tenders for large purchases of rice, corn, soybean meal, sugar, and other items. When bids are received and reviewed, a KSC representative will often visit firms making the most attractive offers to inspect quality and to discuss shipping details.

The Union of Cooperatives has become the second major food importer in Kuwait. Many of the largest private grocery stores belong to this cooperative. They pool their orders to get a lower unit price for imported products. While the union does not receive any direct food import subsidies, the Government provides free storage and low-interest financing to keep food prices low. The union operates with a 10-percent profit margin. Subsidized items provided by KSC are sold at fixed prices by the coop stores.

Selection of importers by the union is based on a review of brochures, magazines, and price lists received from thousands of foreign firms by their managers and import agents. Processed foods from many countries are tested for quality and are evaluated with regard to prices, dependability of supply, and effect of the product on the safety and health of consumers. These activities have resulted in favorable ratings for U.S. lentils, dried beans, peanut butter, honey, corn oil, almonds, salted peanuts, canned pears, and other processed foods.

Catering firms are also important food importers in Kuwait. Some of them are subsidiaries of international hotel chains. Buyers for Kentucky Fried Chicken or Wimpy's may make direct import orders. Some private importers supply the many convenience shops and fast food outlets in Kuwait where the 700,000 immigrant workers are the major customers. Private traders also handle Kuwait's sizable trans-shipment trade.

**Iraq**

Iraq's strong import program makes it one of the most lucrative markets in the Middle East. Its petroleum earnings tripled between 1978 and 1980. Rising per capita incomes led to a thirteenfold increase in agricultural imports between 1972 and 1980. About half of the country's food supply is imported. Most of these imports are consumed in the major cities of Baghdad, Mosul, and Basra at highly subsidized prices.

The U.S. share of Iraq's agricultural imports was only 6 percent in 1981 (table 6). Formal diplomatic ties with the United States, broken in 1967, have not been restored.

**Trade Policies**

Iraq is a member of the Arab Common Market which permits duty-free trade among member countries. Importers

of Iraqi oil, particularly India and Brazil, are given preferential treatment because Iraq tries to maintain balanced trade with each of its trading partners.

The boycott of firms doing business with Israel is becoming less important to Iraq as its import program expands. An increasing number of exemptions has been allowed and the Government has stated publicly that it is committed to purchasing the best available imports, without regard to source.

Agricultural trade policy in Iraq is currently undergoing significant changes that will increase both the amount and the diversity of its food imports. Throughout the seventies, Iraq followed a conservative food import policy. Most food imports were staple foods; imports of luxury and processed food items were restricted. Since 1980, Iraq has given a high priority to improving diets and to alleviating recent shortages of meat, vegetables, and processed foods. Iraq plans to increase food supplies sharply through both imports and domestic production. National food stocks are to be built up and the availability of subsidized food items expanded, particularly in rural areas. The most significant development is the increase in imports of processed foods in response to growing consumer demand for these items.

The Iraqi Government has strict control over all aspects of the nation's economy. The type and volume of food imports to Iraq are determined annually by the Government as part of the national import program administered by the Ministry of Planning. The import program for each calendar year is prepared in October in response to requests for imports by Government agencies and private trading firms. Foreign exchange allocations are made on the basis of these requests, national planning objectives, and the outlook for foreign exchange receipts. In practice, the import program is flexible and may be revised during the year if additional imports are necessary.

**Food Subsidies**

Food imports are governed by Iraq's extensive system of import duties, price controls, and price subsidies, which are determined by the multi-agency Trade Regulating Committee. Import duties vary by commodity, but duties are waived for state trading firms and they handle most of Iraq's food imports. The retail prices of imported commodities are set based on CIF prices, a 7-percent markup, and a 10- to 20-percent margin. Retail price changes are made periodically by the Trade Regulating Committee.

Most final retail prices reflect a series of subsidies paid out at different points in the food system. For instance, feed grains imported by the Animal Feed Production Company, a public import agency, are sold to cooperative feeding operations at 50 percent of the import price. Cooperatives deliver the meat product back to the Government for resale to distributors at well below the purchase price.

Prices charged by vendors and retailers are regulated and the price ceilings are published in newspapers. These subsidized food prices are low. The retail price of bread, for example, is 34 cents for 10 loaves with an average weight of 125 to 130 grams each. The average Iraqi pays about 12 cents per pound for bread, only slightly more than the highly subsidized Egyptian price. Iraq hopes to expand the availability of subsidized bread to rural areas.

## **Food Import Organization and Distribution**

State trading agencies handle virtually all of Iraq's food imports, although a few private importing firms have recently been established with some incentives from the Government. The major state importing agencies are the Iraq Grain Board (IGB), which controls the importing and distributing of Iraq's wheat and rice imports, and the Animal Feed Production Company, which handles the importing and distributing of corn, barley, and soybean meal. The Iraq Tobacco Monopoly has become a large importer of leaf tobacco and cigarettes. Other state trading firms have been organized to import various other commodities.

The number of private importing firms continues to be small and their growth is likely to be confined to meeting some of the expanded demand for food. Many of these firms provide catering services for international hotels and for the growing number of foreign technicians working in Iraq. Some private firms were recently designated by IGB to receive payments for locating grain that the IGB could purchase. Private firms are required to have licenses and foreign exchange permits.

Tenders for imports allocated to each agency under the national import plan are placed in Iraqi newspapers, and foreign suppliers can make offers to the specified officials. Before submitting their bids, all foreign firms must register with the Ministry of Trade. Selected firms are invited to Iraq for further discussion and negotiation. Representatives of the state trading agencies frequently travel to the plant from which the food will eventually be shipped to finish negotiating the contract.

Representatives of foreign firms and trade associations can visit Iraq only at the invitation of Government agencies. These invitations frequently stem from the information provided by the firm on its services and products when it registers with the Ministry of Trade. Private firms can also directly contact the agency responsible for importing their products. Contacts can also be made at the annual Baghdad International Trade Fair and the International Agricultural Fair.

Because of the dominance of public firms in food importing, it is not necessary for foreign exporters to use a private agent or sponsoring firm. In fact, all contacts with private agents must be reported to the Iraqi Government. Direct contact with appropriate importing agencies is particularly important for U.S. exporters because boycott regulations may make it difficult for some firms to register with Iraq's Ministry of Trade.

Much of the food import distribution in Iraq is handled privately. Grocery stores in Iraq are typically small, family-run operations although the number of modern supermarkets is growing. New supermarkets are operated as state-owned cooperatives. Iraq is trying to increase the number of publicly owned bakeries which supply consumers with subsidized bread. In the late seventies, special shops were opened for the sale of wheat flour, rice, and other staples supplied by IGB. Public ownership of major marketing outlets is likely to continue, although there is a potential for foreign management.

Iraq has developed its own merchant marine fleet for transporting perishable items. This increased capacity contributed to the growth in volume and variety of Iraq's food imports. All four of Iraq's ports had undergone expansion prior to the war, but the ports have been out of commission since the war with Iran began in 1980. Most food imports are being transported overland on Iraq's fine transportation system. Two major expressways with a total length of over 2,100 km and the 1,300-km Baghdad-Nusaiba railway are under construction.

## **Iran**

The United States was formerly Iran's major trading partner, supplying over 40 percent of Iran's agricultural imports in the peak year of 1974 (table 6). Iran's efforts to diversify its trade since 1975 resulted in a decline in the U.S. market share for food. The U.S. trade embargo and the longshoremen's strike after the Islamic revolution and the taking of the U.S. hostages in Tehran caused the U.S. share to drop to less than 1 percent for calendar year 1980. The United States resumed food exports to Iran in 1981 when the hostage crisis was resolved. Increased sales of wheat, rice, feed grains, soybean meal, vegetables, poultry, meat, eggs, and pulses are possible. However, it is unlikely that the U.S. sales will quickly return to the record levels of 1974.

The EC and Australia have replaced the United States as Iran's leading agricultural suppliers. Australia was Iran's leading supplier of wheat and live sheep in 1980. Food imports from the EC have also increased, with France as the leading supplier. The EC exports a wide variety of products to Iran, primarily sugar, cheese, meat, milk, butter, and eggs. Food imports from Dubai soared between 1978 and 1980. Dubai has served as an important transshipment point in the Gulf region, re-exporting goods from the United States, Thailand, and Pakistan to Iran, particularly during 1980.

## **Trade Policies**

The recent revolution and war with Iraq have created disruptions in Iran's food imports and resulted in extensive changes in import policies. Foreign exchange earnings from petroleum have declined by 75 percent since 1978 and the destruction of ports, roads, and bridges in the Iran-Iraq war have hampered Iranian capacity to import. At the same time, disruptions in domestic food production have created an urgent need for increased food imports;



thus, Iran's policies are shifting in order to facilitate these imports. Expansion of port facilities to make up for closures necessitated by the war has been a priority policy of the Iranian Government.

During the seventies, prior to the Islamic revolution, increased incomes and rapid urban population growth contributed to a rapid growth in food imports. This trend was further spurred by Government subsidies on a wide range of foodstuffs, including sugar, poultry, and dairy products. Grain imports almost tripled between 1973 and 1978, when they accounted for 30 percent of the country's grain consumption. When the Islamic Government took power in 1979, however, it set forth the goal of increasing Iran's food self-sufficiency and reducing the dependence on food imports. Imports of luxury goods, unrestricted since 1973, were curbed sharply, and some processed food, fresh fruit, and meat items were banned at times.

With these restrictions, the country faced depletion of grain stocks, along with the hoarding and panic caused by chronic shortages of staple foods. Shortages of eggs, milk, cooking oil, meat, and sugar made necessary Government rationing of some foods; food prices increased astronomically. An active black market developed. As a result, talk of food self-sufficiency dwindled and in 1980 Iran undertook a strong import program to meet the country's food needs. This caused a sharp upward jump in both the value and volume of food imports. Grain imports in particular rose by 28 percent between 1979 and 1980 to 3.2 million tons. Imports of dairy products soared in 1980 and 1981.

The war with Iraq caused further rises during 1981. Retail prices skyrocketed. The dependence on Dubai for imports of many items reached alarming proportions in late 1980. Changes in leadership in Tehran and appointment of many members of the Islamic Republican Party to high offices in the Ministry of Commerce led to significant policy changes in 1981. Nationalization of foreign trade was swiftly enacted. Private trade was virtually disbanded.

### **Food Subsidies**

Imported rice and bread were subsidized during the first food import boom of 1974-78. The subsidies ranged from 10 to 25 percent of the purchase price. Imports of a number of semiluxury items were handled by the private trade during that period and were unsubsidized. The Islamic Republican Party kept the subsidies on basic food items and greatly increased the number of people receiving subsidized food. Distribution of subsidized wheat flour and rice was extended to many rural areas. Despite the political announcements about banning imports of processed foods, imports of cheese, butter, dry milk, and other widely used foods soared as the GTO (Government Trading Organization) took over trade previously handled mostly by private firms.

Iran now imports over 80,000 tons of cheese annually and about 70,000 tons of butter. Original plans to ban imports

of frozen poultry and eggs in 1979 were revised. When Turkey informed GTO procurement officials that it had plenty of apples for export, purchases were made for school children and the military forces. A large part of the imported milk, cheese, and butter is distributed free to schools, the military, and other institutions. Retail prices for many items imported by GTO are very near the cost of the item when it enters Iranian ports. Losses on the distribution of imported food apparently exceed \$1.4 billion annually.

Payments of \$250 per ton for domestic wheat purchased from farmers and about double that price for rice also cause the Government to incur losses. The wheat flour sold to bakeries made from local wheat brings only about half the original procurement, storage, and distribution costs.

The budget for food subsidies may be sharply increased if Iran resumes large exports of petroleum. Loans from banks and large firms in East Asia helped Iran finance necessary food imports and subsidized distribution in the last 2 years. The collateral for those loans was Iran's ability to make larger petroleum exports.

### **Food Import Organization and Distribution**

Government control of food imports and distribution has increased since the revolution. Nationalization of foreign trade is a major objective of the Islamic Government, which seeks to reduce profiteering and wholesalers, who are considered nonproductive. All food import decisions are presently being made by a committee of seven that includes three members of the revolutionary party. Preference is given to imports of commodities that are in critically short supply or necessary for production, and for which there are no suitable domestic substitutes.

Some aspects of the organization of food importation in Iran have changed substantially under the Islamic Government. The most important of these changes is the formation of Islamic trading organizations. These organizations represent a combination of public and private trading activities, purpose of which is to reduce profiteering in the marketing process and thus root out corruption. The trading organization operates by commissioning private traders to locate suppliers and determine prices for selected items. In exchange for these services, the Islamic trading organization authorizes traders to import 30 to 50 percent of the order on their own account. The trading organization imports the rest of the invoice and sells it in Government-operated consumer cooperatives at subsidized prices.

Private importation remains highly concentrated, with most imports being handled by a few principal companies. With the economy in flux, however, more people are turning to trading as a source of income. Private traders in Iran are required to register with the Chamber of Commerce to get trading cards. The chamber issued 100,000 trading cards in 1980, indicating an increasing presence of small private traders in all types of import operations.



A significant proportion of food imports continues to be handled by other Government agencies. Many bulk food items are procured by the Government Trading Company and by the Iran Meat Organization. These agencies have sole authority for importing selected foods.

The Government continues to reorganize the country's import mechanisms. Foodstuffs will be the first commodities to be handled by the new import structures expected to be put into place over the next several years. Food import decisions are to be made by specialized working groups for each commodity, which will be located within the Department of Commerce. The working groups' decisions will be based on annual requests for commodities from the consumer and production co-ops being organized throughout the country. Decisions of the working groups must be approved by an interministerial commission appointed by the Minister of Commerce. All import revenues and finances are to be handled by the commission, and the Government customs agency is to be eliminated.

The recommendations of the working groups on volume, prices, and sources will be based on information gathered through direct contacts with exporters. Iranian Embassy staffs overseas are also expected to play a greater role in collecting information on suppliers and prices. Direct contact with private traders and with relevant Government agencies continues to be an important first step for potential exporters to Iran.

Food import distribution is handled by both the public and private sectors. Many private importers sell their goods to consumers through private distributors at the bazaar. Traders importing under Government license sell their goods to the Government for resale through the new network of co-ops. In urban areas, food items are also sold at retail in co-op stores, supermarkets, and specialty shops. The bazaar is still the primary retail outlet in rural areas.

The transport of food imports faces severe problems because of port damage and the deterioration of roads and bridges. The major port of Khorramshah, in the war zone, was out of commission from 1980 to 1982. Bandar Abbas, a new port in the south, has become the principal unloading port. However, a major problem is that it has no rail facilities connecting the port to major urban centers; in fact, there is an acute shortage of surface transportation throughout Iran because of the war. Expansion of facilities at Bandar Shapur (now Khomeini) also helped to compensate for the loss of Khorramshah.

The problem of inadequate port capacity has been given a high priority, partly because local food production is lagging. Ships carrying food are given first priority at the docks. The reopening of the Bandar Khomeini port is expected to improve the food pipeline to Tehran by the end of 1981.

## Chapter 4—Projections: Grains

Growth in food grain imports will depend primarily on population growth, government subsidy programs, and tastes for high-income products such as pastries. Wheat is the staple grain throughout the region, consumed as couscous and French bread in Algeria, and as pita bread elsewhere. While annual per capita consumption varies, its importance in the diet has already declined substantially in Saudi Arabia and is falling in the other countries as well. All countries either mill most of their flour now (Qatar, Kuwait, Iraq, Iran) or plan to increase domestic milling capacity substantially (Algeria, Libya, Saudi Arabia, UAE). As a result, while wheat imports will increase through 1990, flour imports will decline slightly. Wheat and wheat flour, which accounted for 62 percent of total grain imports in 1980, will be only 47 percent in 1990 (table 7).

Rice is consumed by the local population in all countries except Algeria and Libya, although it is consumed by foreign workers in Libya. Rice is generally served with a meat or vegetable stew (Saudi Arabia, Kuwait, UAE, Iraq) and is a complement to bread rather than a substitute. Per capita consumption in 1990 will be higher in Algeria (although still slight), Saudi Arabia, Kuwait, and Iraq; in other countries, per capita consumption will decline.

All governments subsidize the price of bread, and hence, changes in individual income and world prices are less likely to affect demand than in Western industrial economies. In addition, rice is subsidized in Saudi Arabia, Qatar, Kuwait, Iraq, and Iran, but less heavily than bread. These subsidy systems are politically important, and only major shifts in price would affect them, since food imports are a small portion of total export earnings. Subsidy programs are likely to survive fairly dramatic changes of politics and export earnings, as Iran's case illustrates.

The greatest increase in grain imports will occur in feed grains. Several factors affect their level and composition of imports. First, increased income has stimulated demand for meat and dairy products; despite significant increases in consumption since 1975, most countries' per capita consumption of such products is low by U.S. standards and is likely to grow. Second, most governments are committed to increasing domestic production of meat and dairy products, either by enhanced domestic production or increased feeding of imported live animals. Third, there are subsidy programs, applying both to feed grains and facilities needed to increase production and, in some cases, to consumer prices for selected commodities.

Barley is the region's traditional feed, but corn is gaining popularity in many countries. Feed import subsidies may be general, or specifically targeted (as is the case for barley in Saudi Arabia and Kuwait). In the latter case, subsidy policy affects the commodity mix of imports. Feed grain import levels are, in addition, contingent on the performance of planned production projects, and may be more subject to income fluctuations than food grain imports.

Only three countries (Algeria, Iraq, and Iran) have substantial grain production. In Algeria and Iraq, considerable investment is being made to increase grain production, but demand will still outstrip production of both food and feed grains over the coming decade. Iran faces serious production problems associated with political turmoil, and production is not expected to match demand there over the next decade.

There is a wide variation throughout the region in the role of the United States as a grain supplier. The EC dominates the market for wheat flour, but this appears at best a static

Table 7—Eight study countries: Grain production, imports, and consumption

Commodity	Production			Imports			Consumption		
	Actual	Projected		Actual	Projected		Actual	Projected	
	1980	1985	1990	1980	1985	1990	1980	1985	1990
<i>1,000 tons</i>									
Barley	2,465	2,567	2,680	2,265	2,490	3,407	4,730	5,057	6,087
Corn	115	120	150	1,439	3,095	5,455	1,554	3,215	5,605
Rice, milled	879	955	1,020	1,705	2,629	2,820	2,584	3,584	3,840
Wheat and wheat flour <sup>1</sup>	7,717	10,175	11,315	7,628	9,835	11,066	15,345	20,010	22,381
Other grains	370	412	447	385	661	961	755	1,073	1,408

<sup>1</sup>Wheat equivalent.



market over the decade. The United States (together with Canada) is an important supplier of wheat to Algeria, Saudi Arabia, and the UAE, while Australia is the principal supplier in Qatar, Iran, Kuwait, and Iraq (with the United States and Canada). The United States is a major rice supplier for Saudi Arabia and Iraq. In other markets, the United

States faces competition from suppliers of high-quality long grain rice, such as Pakistan. The United States has made some barley exports to Saudi Arabia and Iraq, but in general the EC, Canada, and Australia dominate the market. The United States is a major corn supplier for Algeria, a substantial supplier through third parties for Iran, and a

## Method of Analysis

Chapters 4, 5, 6, and 7 present projections of imports for various agricultural commodities in these eight OPEC countries. Projections are made for 1985 and 1990 for nearly 80 different agricultural products in each country, and the most probable suppliers are noted. Although these projections are presented and explained in only a few pages, the analysis that went into each was considerable. The methodology employed in making a projection determines, in large part, its accuracy.

Statistical work comprised the bulk of the analysis. Using the economic theory of demand as a basis, five different mathematical representations of import demand were specified. These functional forms are linear, logarithmic, variable parameter, semilogarithmic and inverse semilogarithmic demand equations. Each of these functional forms embodies economic theory in a slightly different manner and thus provides a new estimate of elasticities and projected quantities. Where the commodity data sets allowed, each functional form was estimated using Ordinary Least Squares (OLS) regression. No one form was found to be consistently better in representing import demand than any other.

Economic theory also provided the basis for specifying the exogenous variable set for each commodity. Income, the price of a good, and the prices of alternative goods are considered to be the most powerful determinants of demand, whether at the household or national trade level. In addition, since the functions estimated here represented import demand, the size of the population and domestic production of commodities competing with imports were also added as explanatory variables. Different combinations of these variables were used to estimate each functional form.

The definition of these variables varied by country. In an aggregate demand function, disposable income is normally used as the measurement for income. In many of the study countries, however, because of widespread government subsidies in many areas, Gross national product (GNP) was found to be a better measure of income. This was the case in Libya,

Saudi Arabia, and Kuwait, while in Algeria, Iraq, and Iran disposable income was better. (Qatar and the UAE do not report income statistics.)

International prices of commodities were used as the price measures. Even though the estimations were of import demand functions, the prices were not very descriptive. This was in part a result of domestic subsidies making internal prices diverge greatly from world prices, and also because of the own- and cross-price elasticity of demand for many commodities. Further, world prices are averages, and thus may be far from the actual price paid for a commodity. No domestic price series was available for these countries, however.

From the estimations of these equations comes important information on the current structure of demand and projections of its future direction. Often, however, these mathematical representations of demand were not wholly able to represent demand, and the projections they gave were unreasonable. This was often the result of many imported commodities being heavily influenced by nonquantifiable or hard-to-quantify factors. Tastes, import and distribution policies, transshipments, intergovernment relations, and planned but presently nonexistent production all greatly influence the level of imports. Few of these factors are quantifiable, especially in time series. Their effects on future demand were judged by the country analysts of ERS who then made noneconometric projections of imports in 1985 and 1990. In those cases where a commodity is not now imported but appears to have potential, projections were made in the same way.

This study thus uses a combination of statistical techniques and long-term familiarity with the region in order to make projections of trade. Neither type of analysis is complete without the other. The presentation of the projections is made without the detailed discussion of R-squares, t-statistics, or levels of significance. Rather, the projections are discussed within the economic, political, and social setting expected to exist in the eighties. The complete set of econometric projections in computer printout form is available in the Economic Research Service.

limited supplier for the UAE. Political factors are important in limiting direct U.S. export potential in two countries: Libya and Iran.

Significant market development potential exists for wheat in Kuwait and Iraq, rice (with promotion efforts) in Qatar and UAE, barley in Saudi Arabia and Kuwait, and corn in Algeria, Saudi Arabia, and Iraq. Rice sales to Algeria might be possible if a taste for rice as a substitute for couscous could be developed.

## Algeria

Algeria is a major grain importer, showing potential for significant expansion. Algeria's population growth has been extremely rapid, averaging over 3 percent per year and showing no sign of immediate decline. The population is becoming wealthier and better educated. It is demanding more livestock products, most of which are domestically produced. Domestic grain production lags despite the substantial resources being allocated to the sector. These factors, together with Government desire to raise nutritional levels, will continue to spur the growth of grain imports.

Wheat is the food staple. Couscous, made from cracked durum which is steamed and then served with a meat and vegetable stew, is a major part of the diet. French bread is another important food item, especially in urban areas. There is also growing demand for pastry products, requiring soft wheat flours. Algeria has long imported large amounts of wheat since domestic production has not met demand for these products.

In recent years, 1.5 million ha have been planted in durum wheat, 700,000 ha in bread wheat, and 800,000 ha in barley. Oats are planted and harvested as hay on up to 20 percent of the fallow land. About 60 percent of the cereal land is still in the private sector which generally means that it is often planted without benefit of fertilizer. Yields on these farms are generally about one-half ton per hectare. At least 1 million ha of this land are not ideally suited for planting cereals. Some of it includes hillsides exposed to serious erosion, and some steppes where rainfall in most years is inadequate for grain production and where plowing exposes the soil to wind erosion, seriously damaging the fragile ecosystem.

Algeria's wheat crop has averaged about 1.4 million tons over the past decade, although in years of poor weather it has been as low as 800,000 tons.

The Government, through OAIC, the state grain trading organization, imports all cereals into the country and controls their distribution. World wheat prices are not expected to greatly influence Algerian wheat imports. The Government subsidizes the price of wheat to consumers so that nominal prices remain constant. Although attempts are being made to limit these subsidies, they are likely to remain at levels such that only very major shifts in world wheat prices will affect the level of imports.

A more likely limiting factor is Algeria's declining income elasticity of demand, now estimated at 0.6 (a 10-percent increase in income will generate a 6-percent increase in wheat demand). This elasticity is expected to fall as Algerian incomes continue to rise. Still, the income elasticity is not negative and, since population elasticity is estimated to be 1.0, wheat imports are likely to expand.

Algerian wheat imports should continue to grow through the decade, reaching 2.4 million tons in 1990 (table 8). These levels assume that Algeria does not suffer any disastrous harvests. In such an event, Algeria's imports could conceivably increase by as much as 1 million tons. As in the past, the United States and Canada should supply most of the wheat for the Algerian market, mainly durum. The EC has at times been a large supplier to Algeria of the soft wheats which are used to meet the growing demand for bakery products. Whether the EC is a major supplier in any given year will depend in large part on its level of subsidization. Argentina could return as a large-scale supplier of wheat.

Algeria is also a substantial importer of wheat flour—the world's fourth largest in 1980. With their increasing incomes and a liberalized trade policy, Algerians have been consuming more pastry products, which require high-quality refined flours. The EC has been the largest supplier of these flours, due to the close relationship between France and Algeria and the consequent consumers' preference for French-style pastries. Also, the EC provides flour subsidies to encourage Algeria's purchases.

Although Algeria mills most of its own flour, flour imports are expected to continue but slowly decline as milling capacity expands. From a level of 833,000 tons in 1982, Algeria's flour imports are expected to decline to 555,000 tons by 1990. The EC will likely continue to dominate the market, with little opportunity for new suppliers.

Rice is not heavily consumed. Most Algerian rice imports come from Pakistan, although the EC also sends some processed rice. Imports should reach 40,000 tons in 1985 because of the growing acceptance of rice. The amount of rice imported in 1990 will depend largely on the aggressiveness of rice exporters. The potential for large rice exports to Algeria is great if rice becomes more of a substitute for couscous. This could be facilitated by efforts to convince OAIC to import more rice.

Barley is a very important grain in Algeria, but its use is changing radically. Barley was traditionally grown on marginal lands in Algeria as a subsistence crop. However, it has recently become important for feed. With greater demand for meat, however, more barley is being fed to animals, explaining the relatively high income elasticity of import demand, estimated at 1.6. Like wheat, barley production is subject to the vagaries of weather, and Algeria has imported substantial amounts of barley in some years. Because of new conservation measures, many of the 800,000 ha planted to barley are expected to be



returned to fallow by the late eighties, lowering production from present levels of 600,000 tons to about 200,000 tons in 1990.

Barley imports, although expected to grow, will be slowed by growth in imports of corn, which is becoming more accepted as feed. Barley imports are projected at 425,000 tons in 1990. The EC has traditionally been Algeria's major supplier and since the EC provides barley subsidies, this situation will probably continue. Canada is expected to remain a large supplier, at a level of 50,000 to 100,000 tons, possibly more, per year. Although the United States is not presently a barley supplier, it could become a regular supplier.

Corn imports will expand rapidly. Corn, which can only be grown with irrigation in Algeria, has not been a major crop, although its potential as feed is now becoming understood. ONAB plans to increase its manufacture of animal feed to 2.3 million tons by 1985 (versus 370,000 tons in

1979), using both imported and domestic cereals. The Government's desire to increase meat production by 60 percent in the current 5-year plan should lead to imports of 700,000 tons in 1985, far surpassing barley imports. Corn imports will grow even faster in the latter half of the decade. The United States should be the major supplier, with some competition from Argentina.

Other feed grains (sorghum, millet, and oats) are used in very small amounts in Algeria; their imports have never exceeded 22,000 tons. Less than 30,000 tons should be imported annually in the eighties. The EC, presently the largest supplier, will retain the greatest share of the market.

## Libya

Since its domestic agricultural output is limited by physical constraints, Libya needs to import substantial amounts of wheat and flour to meet the growing demand of the expanding and increasingly wealthy population. Imports

Table 8—Algeria: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Barley:								
Production	397	791	545	355	210	na	na	na
Imports	520	300	300	350	425	1.6	na	na
Consumption	917	1,091	845	705	635	na	10.1	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	213	250	400	700	1,600	1.7	na	na
Consumption	213	250	400	700	1,600	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	14	23	30	40	50	NA	na	na
Consumption	14	23	30	40	50	na	1.2	1.9
Wheat:								
Production	1,083	1,301	1,400	1,750	2,065	na	na	na
Imports—								
Grain	1,615	1,622	1,800	2,000	2,400	.6	na	na
Flour <sup>3</sup>	838	824	833	694	555	.4	na	na
Consumption	3,536	3,747	4,033	4,444	5,020	na	189.9	181.8
Other grains:								
Production	56	110	100	150	165	na	na	na
Imports	9	22	30	30	30	NA	na	na
Consumption	65	132	130	180	195	na	—	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Does not include grains used for feed or transshipped.

<sup>2</sup>Milled rice equivalent.

<sup>3</sup>Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

of rice and feed grains have been small and relatively stagnant, but this should change.

Wheat bread is the most important part of the Libyan diet. Large subsidies have compounded the effects of income and population increases, and demand has grown substantially over the past decade. Libya's domestic wheat production has continued to be variable. Although the land planted to wheat nearly doubled in the late seventies, large imports of both wheat grain and flour were necessary. Wheat grain imports have recently been growing rapidly as the Libyans continue to increase their milling capacity. It is the official Libyan policy to phase out flour imports by 1984. Turkey was a major supplier of wheat throughout the seventies, and this is likely to continue because of long-term trade agreements.

Since the price of bread is likely to continue to be heavily subsidized, demand will continue to grow. Wheat imports can thus be expected to grow rapidly in the eighties, reaching at least 665,000 tons in 1990 even though local pro-

duction is expected to grow to over 250,000 tons (table 9). Argentina should remain the major supplier, with the EC and Canada accounting for most of the rest. The Libyans buy from the United States only as a last resort.

The Government is expanding flour-milling capacity. Elimination of flour imports entirely, however, may be difficult because of their popularity, especially German flour with an egg powder additive. The EC and Turkey will supply the initial years' imports.

Rice imports are small, with rice being consumed largely by foreigners such as Egyptians and Pakistanis. Most rice came from Egypt before the break in relations between the two countries. The EC has recently been supplying the bulk, while Pakistan and North Korea also sent some of the 40,000 tons in 1981. The amount of rice imported will depend on the aggressiveness of exporters. Potential for developing the market appears to be great, with additional demand coming from the growing foreign population and changing Libyan preferences.

Table 9—Libya: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Barley:								
Production	196	71	81	85	100	na	na	na
Imports	63	113	120	200	600	1.2	na	na
Consumption	259	184	201	285	700	na	7.5	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	19	19	50	100	200	1.3	na	na
Consumption	19	19	50	100	200	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	36	45	70	70	70	.9	na	na
Consumption	36	45	70	70	70	na	14.9	14.2
Wheat:								
Production	99	141	141	175	250	na	na	na
Imports—								
Grain	278	192	350	480	665	1.1	na	na
Flour <sup>3</sup>	265	447	278	0	0	.8	na	na
Consumption	642	780	769	655	915	na	258.1 <sup>4</sup>	187.3
Other grains:								
Production	—	—	—	—	—	na	na	na
Imports	7	0	5	5	5	NA	na	na
Consumption	7	0	5	5	5	na	—	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Does not include grains used for feed or transshipped.

<sup>2</sup>Milled rice equivalent.

<sup>3</sup>Wheat equivalent.

<sup>4</sup>Represents unusual buildup of stocks.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



Another high-potential import area is the feed grain market. Libya has recently been rapidly expanding its feeding operations, importing growing amounts of barley and corn, as well as other feed supplements. Libya imports large numbers of live sheep and cattle and feeds them for short periods before slaughter. These imports of live animals are expected to rise substantially. In addition, plans call for expansion of domestic sheep and dairy herds, as well as poultry output, all of which will increase feed use. The activities are encouraged with investment funds and subsidized input prices, including feed prices.

Barley is Libya's largest feed import and its largest domestically produced feed. Output is extremely variable; in 1971, 32,000 tons were produced while 1973 production was 205,000 tons. Substantial amounts of barley are imported in years of poor harvest. Since most new livestock projects will not be operational until the mideighties, barley imports will not grow much in the early eighties, assuming a 100,000-ton domestic production. In 1982, barley imports remained at 120,000 tons, but should reach 200,000 tons in 1985. Given the Libyan preference for feeding barley, increasing demand should push imports to 600,000 tons by 1990. Most of this barley will come from the EC. Turkey could also be a large supplier. Canada and Australia have an opportunity for some of the residual, but direct shipments from the United States would come only as a last resort.

Libya's corn imports should grow substantially, though more slowly than barley imports. Corn is a relatively unknown feed in Libya, though it was imported sporadically in the seventies. With the large increase in feeding expected, corn imports should reach 200,000 tons in 1990, assuming that barley remains preferred to corn. Extensive market development programs could cause corn imports to surpass those of barley. Argentina will probably be the major supplier of corn, although there seems to be an opportunity for the United States. Most resistance to corn feeding comes from the potential for reliance on American corn.

Libya has shown little interest in other feed grains such as oats, millet, and sorghum. Less than 7,000 tons of these grains were imported in the largest year during the seventies; imports should remain under 5,000 tons annually during the eighties.

## Saudi Arabia

Saudi Arabia's imports of all major grains have soared in the last few years, partly due to Government efforts to improve diets. Wheat imports reached 470,000 tons in 1979 compared to 133,000 tons in 1977. Rice imports doubled to over 400,000 tons during the same period. Feed grain imports, especially barley and sorghum, also grew rapidly. Using its strong financial position, the Government initiated a large food subsidy program in 1974, greatly lowering the prices of most foodstuffs. The program has led to significantly increased food consumption by the

growing indigenous and expatriate worker population. The recent Saudi policy of dramatically increased grain reserves, with a target of 1 year's supply, has also led to increased imports. In addition, Saudi Arabia has become the major food supplier to Yemen, most of it smuggled.

Wheat products form a major part of the Saudi diet. The traditional Arab pita bread and the Western-style loaf bread as well as a growing amount of pastry products are consumed widely in Saudi Arabia. The demand for wheat products has been growing rapidly, partly due to the growing indigenous and expatriate population.

The price of bread is extremely low, at about 33 cents per pound, and flour is subsidized at 20 percent. The Government has attempted to increase domestic wheat production to meet this demand. But production is not keeping pace, and will probably not reach more than 600,000 tons by the end of the decade (table 10). Although not large, this represents a tripling of the 1980 level of production, and will be contingent on further increases in irrigated area.

Although wheat and all other grains are imported privately, the Government carries out the policies by either purchasing from importers or providing subsidy inducements to them.

Continuous stockbuilding plus increasing domestic demand for wheat products is expected to continue throughout the eighties. These factors combined with increasing shipments to Yemen raised Saudi wheat imports to 800,000 tons in 1982. Imports will continue to grow rapidly after 1982, in part because of recent Saudi desire to mill more imported wheat rather than import flour. Imports should reach 1 million tons in 1990. The United States will supply most of this wheat, as it has in the past. Australian shipments will also be substantial and growing, while Canada seems to be dropping out of the market. The other major source of supply will be the duty-free zone of Rotterdam.

Saudi Arabia imported larger amounts of wheat flour than of wheat grain during the seventies. These flour imports reached 607,000 tons in 1980, making the Saudis the world's third largest flour importer after the Soviet Union and Egypt. Most of this flour has been used for bread, but increasing amounts are now used for pastries. With the opening of new flour mills throughout the eighties, however, the amount of imported flour used for baking bread will tend to decrease. By the end of the decade, imports are expected to end completely. But wheat imports will allow a constant level of per capita consumption of about 110 kg.

Although not as heavily subsidized as wheat, rice is sold at low prices because of its importance in the diet. (The major daily meal is a bed of rice topped with a meat and vegetable stew.) A complex set of subsidies is offered to both the importer and consumer. Among wealthy Saudis, per capita rice consumption has nearly peaked. But, among many of the poorer groups, especially foreign workers,

rice consumption could grow. Per capita consumption averages only 35 kg.

The Saudis produce almost no rice; as demand rises because of income and population increases, more rice will be imported. Imports rose to an estimated 625,000 tons in 1982, partly because of a large number of well-paid Jordanian and Egyptian workers who have been entering the country as lower and midlevel management personnel. Imports will continue to increase, reaching 750,000 tons in 1990. Most will be supplied by the United States out of southern ports, since the Saudis favor U.S. high-quality, long-grain rice. Pakistan and Thailand will also be large suppliers, with smaller amounts shipped by many other exporters.

Meat is becoming an increasingly important part of the Saudi diet. The Saudis hope to become self-sufficient in poultry and dairy production by 1990. They import large numbers of live animals, especially sheep, and feed them for short periods. This practice is likely to continue be-

cause of strict adherence to Muslim slaughter practices and the need to supply live sheep for slaughter at Mecca. Since the Saudis produce only small amounts of feed, less than 250,000 tons (mostly sorghum) annually, they import substantial amounts of feed grains. These imports will grow tremendously as the Saudis move toward greater self-sufficiency in meat production, since feed grain production is not expected to grow.

Barley is produced in very small amounts, but it has recently become the dominant feed, because of numerous subsidies. The Saudis subsidize barley imports at 50 percent of their cost. The EC subsidizes its barley exports. And, the Saudis provide milling services free of charge and even pay for trips outside the country by private importers to buy barley. The Saudis reported importing 54,000 tons in 1979, 1.2 million tons in 1980, and an exceptionally large amount of 2.2 million tons in 1982.

Barley imports by Saudi Arabia should continue to be large. Saudi Arabia cannot now absorb yearly imports of 1 mil-

Table 10—Saudi Arabia: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Barley:								
Production	25	28	25	27	30	na	na	na
Imports	53	1,229	2,200	850	1,000	1.1	na	na
Consumption	78	1,257	2,225	877	1,030	na	3.0	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	305	330	400	800	1,300	1.7	na	na
Consumption	305	330	400	800	1,300	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	404	355	625	700	750	.7	na	na
Consumption	404	355	625	700	750	na	35.0	53.6
Wheat:								
Production	175	225	400	550	600	na	na	na
Imports—								
Grain	191	293	800 <sup>4</sup>	1,000	1,000	1.0	na	na
Flour <sup>3</sup>	528	607	200	100	0	.6	na	na
Consumption	894	1,125	1,000	1,650	1,600	na	112.5	114.3
Other grains:								
Production	219	228	222	240	255	na	na	na
Imports	150	350	400	500	700	1.3	na	na
Consumption	369	578	622	740	955	na	15.3	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Does not include grains used for feed or transshipped.

<sup>2</sup>Milled rice equivalent.

<sup>3</sup>Wheat equivalent.

<sup>4</sup>Represents unusual buildup of stocks.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



lion tons. But, as more livestock projects are undertaken, barley imports will again grow, regaining the 1 million-ton level in 1990. A large portion will be supplied by the EC, both directly and through the duty-free zone of Rotterdam. Australia will continue to be a major participant in the market. There is also opportunity for the United States and Canada although they have not been large suppliers.

Corn has not been imported in large amounts because of the extensive barley subsidies. Corn is imported at a 50-percent subsidy, but milling and other subsidies do not apply to corn. Barley equipment will not likely be provided free within the next few years, decreasing barley's advantage as a feed. Also, benefits of feeding corn are becoming better understood in Saudi Arabia and this should help increase demand. Corn imports at 1.3 million tons should surpass those of barley by 1990. Most corn will be fed to poultry; as the amount of domestically produced poultry increases, so will corn imports. Thailand is the largest supplier of corn. But, as Saudi demand increases, the United States could dominate the market, surpassing Thailand. Argentina and South Africa could also become secondary suppliers.

Saudi Arabia also imports and produces substantial amounts of sorghum. The amount of domestic production is likely to level off or fall as land is transferred to more profitable crops; but, imports will continue to rise. More than half of these imports come from Sudan; with the substantial Saudi investment there, such imports will continue. Sorghum imports reached an estimated 400,000 tons in 1982, since the import cost, like that of other feeds, is subsidized by 50 percent. Sorghum imports will continue to grow during the rest of the decade, although not as rapidly as those of corn or barley. After Sudan, Thailand will be the largest supplier. U.S. exporters have not yet exercised the option; but, there is the possibility of a large market for them.

## United Arab Emirates

UAE grain imports increased dramatically with the influx of refugees from the 1980 Iran-Iraq war. Even before that, UAE imports jumped as Iranian grain was transshipped through the UAE because of the U.S. hostage crisis. Dubai provides free port facilities to the large number of independent traders in the country; rice and wheat flour are transferred for shipment to Iran's smaller, isolated ports. Many of the war refugees will become permanent residents. They and the many educated foreign workers who are also settling permanently will create a new group of wealthy workers and demand large amounts of food in a country that produces almost no grain.

UAE wheat imports in the late seventies were extremely variable. In 1976, 34,000 tons of wheat were imported; imports rose to 261,000 tons in 1977, but dropped to 112,000 tons in 1978 and 53,000 tons in 1979. The reason for this was the construction of a flour mill and the development of large wheat stocks by Abu Dhabi. Rather than maintain the stocks, however, mill managers decided to draw from

them. As a result, the stocks were nearly depleted by 1980. In order to replenish these stocks, feed all the new arrivals into the country, and send some flour to Iran, wheat imports soared again in the early eighties.

Wheat imports reached 300,000 tons in 1982 (table 11). The UAE has a large milling subsidy, keeping the flour price low. This low price has encouraged more bread consumption and dramatically increased pastry demand, but the disappearance of the Iran market should cause imports to level off at 200,000 tons by 1990, enabling a per capita consumption of about 120 kg. This market will be almost completely monopolized by the Australians (who also built the flour mill at Abu Dhabi), but the United States could become a residual supplier.

The new mill in Abu Dhabi caused UAE flour imports to fall substantially from their high of 78,000 tons in 1976, but some flour is being imported by Dubai and Sharjah. This flour is not subsidized and most is of high quality for special baking. Flour imports in 1985 will probably not exceed 21,000 tons because of flour's relatively high price. As the quality of Abu Dhabi's flour improves, imports should decline to 17,000 tons in 1990. The EC, United States, and Australia will be the suppliers.

UAE rice imports have greatly increased in the short term because of Iran's trade difficulties. These imports are likely to remain at higher levels over the long term because of the Iran-Iraq war. Rice imports increased from just under 290,000 tons in 1979 to nearly 350,000 tons in 1980. Less than 100,000 tons in each year were consumed in the UAE, however, with the rest going to Iran. With the Iran-Iraq war, a great deal of rice continues to be transshipped through Dubai, but transshipment is declining rapidly. The war's long-term effect on UAE rice imports will come from the growing refugee population.

UAE rice imports fell to 300,000 tons in 1982. Of this, 200,000 tons were transshipped; the rest was consumed domestically. As transshipments fall, so will the overall level of imports; 1990 imports will be 125,000 tons with per capita consumption of 69 kg. Most will be supplied by Pakistan. The United States is likely to be the second largest supplier, but increased promotion efforts could bring American shipments close to Pakistan's. Thailand and India will supply smaller quantities.

A great deal of growth is also expected in UAE feed imports. Livestock feeding is a new venture in the UAE, having started in the midseventies. Most emphasis has been on poultry and dairy production and, by 1980, almost half of the poultry consumed there was domestically produced. The UAE hopes to become self-sufficient in meat production, entailing expansion of the poultry and dairy industries as well as the feeding of imported live sheep. Since only a small amount of sorghum is produced domestically, this expansion will depend on imported feeds.

During the seventies, some barley was imported to be used as feed, but only in relatively small amounts. This situation

is changing, since the UAE now provides a 50-percent subsidy on imported feed. This subsidy was started in the late seventies, but is just beginning to be used widely. As expansion of livestock feeding continues, especially with the introduction of large-scale sheep feeding, barley imports should grow to 100,000 tons by 1990. Most of this barley will come from Australia and the EC. India and Pakistan will probably also supply some barley in surplus years.

The UAE imported some corn for feed in the late seventies. Corn is given a 50-percent subsidy and is mainly fed to poultry. The owners of livestock operations readily accept corn as a feed and imports can be expected to grow rapidly. Corn imports should grow to 150,000 tons in 1990 as the UAE approaches its goal of meat self-sufficiency. Most will come from Thailand and the United States, with strong competition coming from Argentina and South Africa, both of which receive UAE oil.

There is little UAE interest in other feed grains (sorghum, millet, oats) even though domestically produced sorghum is used as a feed. Imports of such feeds are likely to remain at less than 1,000 tons annually through the decade.

## Qatar

Qatar, with fewer than 270,000 people, is a small importer of food and feed grains. The population is growing rapidly, however, both because of a constant inflow of immigrant workers and large numbers of wealthy refugees of the Iran-Iraq war. This increase in population will substantially increase the demand for grain imports.

Qatar's wheat imports rose substantially in 1980 to 37,000 tons (table 12). This level represents a 48-percent increase over the late seventies' average of 25,000 tons. Most goes into the baking of bread as the demand for pastries in Qatar is very small. A recently introduced subsidy of 20

Table 11—UAE: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Barley:								
Production	—	—	—	—	—	na	na	na
Imports	6	20	30	60	100	NA	na	na
Consumption	6	20	30	60	100	na	—	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	2	10	25	75	150	NA	na	na
Consumption	2	10	25	75	150	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	131	347	300	325	125	1.1	na	na
Consumption	131	347	300	325	125	na	59.6	69.4
Wheat:								
Production	—	—	—	—	—	na	na	na
Imports—								
Grain	112	80	300	350	200	1.1	na	na
Flour <sup>3</sup>	35	26	21	21	17	.6	na	na
Consumption	147	106	321	371	217	na	124.7	120.6
Other grains:								
Production	1	3	3	4	4	na	na	na
Imports	0	1	1	1	1	NA	na	na
Consumption	1	4	4	5	5	na	—	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Does not include grains used for feed or transshipped.

<sup>2</sup>Milled rice equivalent.

<sup>3</sup>Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



percent on flour should increase the demand for both bread and pastry products. This subsidy was introduced mainly to compete with Saudi Arabia's subsidy program, but it is expected to stay.

Qatar's wheat imports will grow, but will not be very large. Imports in 1982 reached 40,000 tons, and will grow to 50,000 tons in 1985. Some will be used to supply bread to transient ships. The increased consumption of pastry products will raise imports further to 65,000 tons in 1990 with per capita consumption at about 130 kg. Australia is likely to continue as the sole supplier.

Qatar has milled nearly all its own flour since the construction of a flour mill by the Australians in the midseventies. The flour subsidy in Qatar applies only to locally milled flour, and as a result, flour imports in the eighties will probably never exceed 100 tons. This will be very refined flour for special baking, coming from the United States and EC.

Rice is an important staple in Qatar. Its import price is subsidized so that importers never pay more than \$500 per ton. The recent transshipments to Iran have declined substantially. With population growth, however, rice im-

ports should climb to 25,000 tons by 1990. Most will come from Pakistan, but the United States can also expect purchases in some years. Although India and Egypt have been suppliers, their exports to Qatar will probably cease as their surpluses are declining.

Corn and barley for feed will show the most rapid growth in Qatar, and are likely to be the major grain imports by 1990. Qatar, like many other countries, is attempting to achieve self-sufficiency in meat production. In 1980, Qatar produced about 30 percent of its total meat demand. This percentage included mainly poultry and dairy production, and also some sheep feeding. Most of this livestock was fed domestically grown sorghum, about 30,000 tons, although some barley was imported. As incomes and population increase, more meat will be demanded, which will mean substantial growth in feed grain imports if demand is met with domestically produced meat.

Barley imports will not register large increases. Barley imports averaged less than 6,000 tons per year in the seventies, despite unusually heavy imports in 1978 and 1980. This level was only 8,000 tons in 1982. Barley imports will probably not reach more than 12,000 tons in 1990, mainly supplied by Australia and the EC.

Table 12—Qatar: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Barley:								
Production	—	—	—	—	—	na	na	na
Imports	11.0	19.0	8.0	10.0	12.0	NA	na	na
Consumption	11.0	19.0	8.0	10.0	12.0	na	—	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	0.0	0.0	12.0	40.0	100.0	NA	na	na
Consumption	0.0	0.0	12.0	40.0	100.0	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	19.0	23.0	23.0	24.0	25.0	1.1	na	na
Consumption	19.0	23.0	23.0	24.0	25.0	na	55.5	50.0
Wheat:								
Production	—	—	—	—	—	na	na	na
Imports—								
Grain	24.0	37.0	40.0	50.0	65.0	.9	na	na
Flour <sup>3</sup>	2.7	0.0	.1	.1	.1	NA	na	na
Consumption	26.7	37.0	40.1	50.1	65.1	na	137.0	130.2

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup> Does not include grains used for feed or transshipped.

<sup>2</sup> Milled rice equivalent.

<sup>3</sup> Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Part of the reason for Qatar's low barley imports is the lack of feed mills. As a result, most of the increased feed imports will be corn. Qatar imported over 2,000 tons of corn in only 1 year during the seventies, but the trend is changing rapidly as the use of corn for feed becomes more widespread. By 1990, 100,000 tons of corn will have to be imported to support the livestock sector, mostly from Thailand.

Qataris show little interest in imports of other feed grains, including sorghum. Sorghum, grown on about 25 percent of the cultivated area, is the principal feed grain. Most is used by small farmers as feed for their own sheep. Sorghum production increased only slightly in recent years in spite of the rapid growth of the livestock sector because Government subsidies have made vegetable production relatively more profitable.

## Kuwait

Kuwait's grain imports largely depend on the size and composition of the country's population. Income distribution is uneven, since the indigenous population, which controls most of the wealth and receives most of the subsidies, is only 500,000 out of a total of 1.35 million. Many of the foreign workers and their dependents, numbering 850,000 or 70 percent of the total, are unskilled and receive only a minimal wage. These foreign workers are responsible for a large amount of consumption; a change in their number or composition will affect the amount of grain imports.

Kuwait's population is growing and changing in composition. The birth rate in Kuwait is high, approximately 38 per 1,000, and the number of immigrant workers in the country continues to increase. In addition, there has been a large influx of refugees from the Iran-Iraq war. Kuwait's population growth rate is expected to decline from 6 percent to approximately 3 to 4 percent in the eighties; as a result of a slowing in the influx of foreign workers, its composition is also expected to change. A growing percentage of these workers will be skilled, demanding higher salaries and more and better quality food.

Wheat is Kuwait's major grain import. Wheat imports increased from 90,000 tons in 1974 to 283,000 tons in 1980 (table 13). These large increases reflect growing demand and changing tastes. Wheat was traditionally consumed in Kuwait in the form of a rough unleavened bread similar to pita. As incomes rose, however, better quality breads and more pastries have been demanded and produced, raising per capita consumption to nearly 150 kg. Also, flour is shipped to Iraq, further raising wheat imports by 100,000 tons.

Kuwait's wheat imports will continue to increase with the continued growth in population and the rising demand for fine bakery products, although bread consumption will decline. Since all bakery products are heavily subsidized, at close to 40 percent, only very large increases in the world price of wheat will affect imports. Wheat imports

are projected to rise to only 300,000 tons by 1990, however, because the trade with Iraq will probably end. Australia presently controls the total Kuwait wheat market; this control will likely continue. Some opportunity for American market penetration is possible since many Kuwait Supply Company officials are U.S.-educated.

KSC imports and mills wheat. The milling processes used are sophisticated enough to provide every grade of flour needed for baking. Kuwait's imports of wheat flour have, therefore, been minimal, averaging well under 1,000 tons annually. This trend is expected to continue.

Rice, cooked and served with meat and vegetables, is the major ingredient in the traditional Kuwaiti meal. Even at the highest income levels, meat is not substituted for rice. Rice is not an inferior good even at extremely high income levels. At lower income levels, especially among South Asian immigrant workers, the income elasticity of demand is high. The price of rice in Kuwait is heavily subsidized, although not as highly as wheat. The subsidy, expected to be continued, is designed to keep the local price of rice at a fairly constant nominal level.

With the absolute growth in the Kuwaiti population and the influx of skilled workers, rice imports should grow substantially. Rice imports should reach 150,000 tons by 1990 as per capita consumption remains relatively constant at 70 kg. During the seventies, Pakistan was the largest supplier of rice to Kuwait; it is expected to remain so, but with a declining share. The Kuwaitis prefer the long-grain, basmati rice of Pakistan, but apparently some friction has occurred among exporters and KSC. This could provide excellent opportunities for U.S. rice exporters if they are willing to supply rices similar to basmati, such as texmatic. Supplies from China and Thailand are likely to decline, while those from India and Burma should increase.

Meat and dairy products have become a larger part of the diet for a growing percentage of the Kuwaiti population. It has become official government policy to produce some of these products locally; dairies, poultry farms, and feedlots for imported live sheep have been established. These operations depend on imported feeds, except for a very small amount of domestically produced barley. Even larger feed imports will be required with the expected expansion in meat and dairy production.

Barley is the major feed. It is imported and milled by KSC, then sold to livestock operations at a 50-percent subsidy. Most barley is fed to poultry, the highest priority livestock operation. Barley imports increased from 53,000 tons in 1977 to over 125,000 tons in 1979, as more livestock were fed. They fell back in 1980, however.

Barley imports should resume growing rapidly, as barley is preferred to other feeds. This preference does not seem to be changing. Barley imports are expected to reach 220,000 tons in 1990. Kuwait had no steady barley supplier during the seventies, so the future supplier of this market



is difficult to foresee. The United States has not been active in the market, but has the opportunity to enter it. Other probable suppliers are the EC, Australia, and Canada.

Corn is also being fed to a limited extent in Kuwait. The subsidy program administered by KSC favors barley as a feed. Corn imports were only 30,000 tons in 1978 and 60,000 tons in 1980. As more live sheep are imported for fattening and slaughter, imports of corn will continue to grow, reaching 105,000 tons in 1990. This projection implies a rapid rate of growth, but the quantity of corn will remain substantially below that of barley unless some change in the subsidy program is made. Thailand is likely to supply most of this corn, although there is a substantial opportunity for the United States.

Imports of other feed grains such as sorghum and millet are minimal. Only in 1970 did they reach more than 1,000 tons and usually they have been substantially less. These grains are mostly used for pet food, and are subsidized by the Government. Their imports are not expected to be above 100 tons a year.

## Iraq

Growth in Iraq's grain imports since the midseventies has been remarkable. Wheat imports alone increased from 500,000 tons in 1976 to nearly 1.7 million tons in 1980 (table 14). Imports of rice more than doubled over the same period, as did those of barley and corn. The reason has been a major shift in Iraq's food policies. In the sixties and early seventies, Iraq's goal was to be self-sufficient in food, resulting in a meager Iraqi diet. Later, however, the Government decided to use oil revenues to import food and improve diets. Domestic food production has not been neglected and substantial investments to increase output are continuing. But, Iraq's rapidly growing population and pent-up demand will spur continuing growth in grain imports.

Wheat is Iraq's major grain import. It imports more wheat than any of the other study countries. Bread is the staple of the Iraqi diet and is sold at the highly subsidized price of 13 cents per pound. Egypt is the only country where bread is less expensive. Bread distribution by the State

Table 13—Kuwait: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Barley:								
Production	—	—	—	—	—	na	na	na
Imports	45.0	42.0	130.0	170.0	220.0	1.5	na	na
Consumption	45.0	42.0	130.0	170.0	220.0	na	—	—
Corn:								
Production	—	—	—	—	—	na	na	na
Imports	30.0	60.0	60.0	80.0	105.0	1.4	na	na
Consumption	30.0	60.0	60.0	80.0	105.0	na	—	—
Rice, milled:								
Production <sup>2</sup>	—	—	—	—	—	na	na	na
Imports	99.0	98.0	130.0	170.0	150.0	.7	na	na
Consumption	99.0	98.0	130.0	170.0	150.0	na	72.4	70.4
Wheat:								
Production	—	—	—	—	—	na	na	na
Imports—								
Grain	152.0	283.0	230.0	290.0	300.0	.6	na	na
Flour <sup>3</sup>	3.0	0.0	1.0	1.0	1.0	NA	na	na
Consumption	155.0	283.0	231.0	291.0	301.0	na	147.7	141.3
Other grains:								
Production	1.0	1.0	1.0	1.0	1.0	na	na	na
Imports	0.0	2.0	.1	.1	.1	NA	na	na
Consumption	1.0	3.0	1.1	1.1	1.1	na	—	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup> Does not include grains used for feed or transshipped.

<sup>2</sup> Milled rice equivalent.

<sup>3</sup> Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Organization for Grain has recently become more widespread, and the Kurdish areas especially are being supplied with bread in order to quell discontent. With wide distribution and subsidized prices, demand for bread in Iraq continues to grow.

Iraq produces a substantial amount of its own wheat, averaging 1 million tons annually; more in very good years. Production reached 2.6 million toris in 1972. The exact level depends on the weather and degree of mismanagement of cooperatives and collective farms which are responsible for a large part of the production. While the Government is presently trying to increase production, output is likely to remain variable but rise to 2 million tons by 1990. Nearly 800,000 tons of this will be used for feed, however.

The Iraqi Grain Board, the sole importer of Iraq, imported a record 2.2 million tons of wheat in 1982. This level is likely to increase to 2.8 million tons in 1990 as consumption stays at about 190 kg per capita. Australia will remain

the largest supplier, with the United States and Canada providing large amounts. Recent credit provisions are a key to U.S. supplies. Turkey has recently entered the market and will probably supply about 200,000 tons annually.

Iraq's wheat flour imports are mainly used for fine pastries and are supplied by the EC. Domestically produced and imported wheat are milled by the General Establishment for Milling, which produces bread flour. Demand for pastry products requiring imported flour is limited and is not expected to grow much. Thus, wheat flour imports should remain at approximately 28,000 tons, supplied by the EC.

Rice is becoming a more important staple, though not replacing wheat. Heavily subsidized, rice is still substantially more expensive than bread, making it a higher income food. As incomes continue to rise and the population expands, the demand for rice will continue to increase, since rice has an estimated income elasticity of demand of 1.1. Wider distribution of rice to rural areas is also being

Table 14—Iraq: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons						Kg/yr	
Barley:								
Production	617	575	770	810	900	na	na	na
Imports	164	278	400	350	350	1.4	na	na
Consumption	781	853	1,170	1,160	1,250	na	7.4	5.0
Corn:								
Production	35	60	95	120	150	na	na	na
Imports	88	90	200	500	1,000	1.3	na	na
Consumption	123	150	295	620	1,150	na	—	—
Rice, milled:								
Production <sup>2</sup>	110	123	84	104	130	na	na	na
Imports	252	344	426	700	950	1.1	na	na
Consumption	362	467	510	804	1,080	na	34.6	51.1
Wheat:								
Production	910	1,300	1,600	1,800	2,000	na	na	na
Imports—								
Grain	1,150	1,672	2,200	2,500	2,800	1.0	na	na
Flour <sup>3</sup>	0	26	28	28	28	NA	na	na
Consumption	2,060	2,998	3,828	4,328	4,828	na	200.2	190.3
Other grains:								
Production	16	18	6	5	5	na	na	na
Imports	0	10	25	25	25	NA	na	na
Consumption	16	28	31	30	30	na	—	—

— = Negligible.  
 NA = Not available.  
 na = Not applicable.  
<sup>1</sup>Does not include grains used for feed or transshipped.  
<sup>2</sup>Milled rice equivalent.  
<sup>3</sup>Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



undertaken. Domestic paddy production is presently averaging under 200,000 tons annually, a level that is not expected to be exceeded over the eighties, so most increases in rice demand will have to be met by imports.

Iraqi rice imports should grow to 950,000 tons in 1990. The United States will remain the largest supplier of rice, as Iraqis favor the long-grain rices of Arkansas, Louisiana, and Texas and U.S. credit guarantees (GSM 102) have been granted by the Department of Agriculture to facilitate sales. Pakistan and Thailand will be smaller suppliers, with India and Burma also supplying small quantities.

Meats, especially poultry, are also beginning to be distributed as part of the program to improve Iraqi diets. Meat is heavily subsidized and the potential demand is great. Iraq has shown a great deal of interest in developing its domestic livestock industry. Feed grains are imported by the Animal Feed Production Company and then sold to livestock cooperatives at nearly a 50-percent subsidy. Poultry production is emphasized but production is still limited. Most sheep in Iraq are still grazed. The dairy and beef industries are insignificant. As all these industries expand, Iraq's imports of feed grains will probably have to increase.

Barley, a major part of the feed mix, has long been grown in Iraq. Barley production is substantial and growing, and is not as highly variable as wheat production, since it is not as dependent on favorable weather. Barley has, moreover, traditionally been an important food in the rural areas. Although its use is declining, human consumption is still slightly more than 100,000 tons a year. With a high support price of nearly \$200 per ton and the wide availability of inexpensive fertilizer, barley production should be close to 1 million tons annually by 1990.

Though barley production grew during the seventies, Iraq found it necessary to supplement production with imports to meet the rapidly growing demand. As the Iraqis continued to expand their livestock industry, this demand rose and imports of 400,000 tons were needed in 1982. The growing interest in corn as a feed grain will probably depress barley imports to 350,000 tons by 1985 through 1990, however. The United States and the EC will alternate as the largest suppliers of this barley, depending on the level of the EC barley subsidy. Canada and Australia should both remain 50,000-ton suppliers.

Corn will meet the largest part of Iraq's growing feed demand and a great deal of emphasis is being put on its domestic production. Production of corn, produced solely on state farms, is expected to increase from the present level of 100,000 tons to 150,000 tons by 1990. Corn will continue to be grown on irrigated land; modern machinery and large amounts of fertilizer will be used. With the continued expansion of the poultry industry and the beginnings of a dairy industry and sheep feeding operations, domestic production of corn will probably not meet the rapidly rising requirements.

Large corn imports will be needed. Although Iraq imported less than 1,000 tons of corn in 1975, a record 151,000 tons were imported in 1979. Then, corn imports increased to 200,000 tons in 1982, mostly to supply the poultry industry but slowed by the transport problems the country is experiencing. With the planned growth in the dairy industry, 1985 imports should be more than double those of 1982. Another doubling should occur by 1990. Although Thailand supplied almost all of Iraq's corn in recent years, there is a good deal of potential for the United States in this market. Many Iraqi Animal Feed Production Company officials were educated in the United States and are interested in U.S. Government credit guarantee programs. Thailand will continue to be a major supplier, however, and the Iraqis have recently shown interest in Argentine corn.

Iraq does not import feed grains other than barley and corn, a situation expected to continue. There may perhaps be a small amount of sorghum imported from either Thailand or Sudan, but this should amount to no more than 25,000 tons per year.

## Iran

The change in Government has not greatly affected the amount of grain imports. Although total grain imports fell slightly in 1979, they regained or exceeded prerevolution levels in 1980 and 1981. This indicates the importance of imports in meeting Iran's overall food demand. With the high population growth and a lagging domestic agricultural sector, Iran will probably continue to need food imports. Grain imports by Iran can be expected to grow substantially if the internal situation of Iran stabilizes and large oil exports resume.

Wheat is a staple food in Iran that provides an estimated half of total caloric intake. It is grown on almost every farm. About 50 percent of the wheat is consumed on the farm where it is produced; about 40 percent reaches urban markets where demand has increased dramatically in the past decade. Ten percent of wheat production is kept for seed. There are substantial fluctuations in harvests since most wheat production is rainfed. Total output has averaged 5 million tons annually.

Wheat imports should grow substantially. Rice was substituted for wheat bread by the higher income groups in the midseventies; but, since the 1979 revolution, rice has been high priced and generally in short supply, as are meats. Thus, bread is again relied upon. Iran's population growth is expected to remain at over 3 percent through the eighties, further increasing wheat demand. Domestic expansion of wheat production is not likely to exceed 2 to 3 percent per year over trend. Thus, much of the increase in demand for wheat will be met by imports.

Iran imported 1.8 million tons of wheat in 1982 (table 15). Part was used to rebuild stocks which the Iranians have sought to maintain at 1.5 million tons and part was used to make up for shortages of other foods. Policy thus plays a major role as the Government is the sole legal importer.

Rebuilding of stocks should continue during the first half of the decade if the situation in Iran stabilizes. Stockbuilding, combined with population increases, should raise imports to 3 million tons in 1990. The United States can expect to be the most important supplier, since it can consistently supply the large quantities needed. Australia will probably be a large supplier in years of excess supplies. The EC and Turkey are likely to supply sporadic exports.

Flour imports are not large since Iran mills almost all of its own flour. Flour imports are mostly very high-quality pastry flour from the EC, mainly used by hotels and restaurants. Imports of this flour reached 40,000 tons in the late seventies, but the present situation in Iran has cut import levels. Only about 14,000 tons were imported in 1982, but this amount is expected to grow to 35,000 tons by 1990. The EC is expected to continue as the major supplier.

Iran is also a major producer of rice. Paddy production is concentrated in the wet lowlands bordering the Caspian Sea. Domestic production is inadequate to meet demand, however. Growth of rice imports will be slow, although the price subsidies that existed under the Shah have been reinstituted by the revolutionary government after a brief suspension. Thus, rice imports have just about regained their prerevolutionary peak of 600,000 tons attained in 1977, and are likely to continue at this level. Imports will probably be 700,000 tons by 1990, assuming oil exports regain earlier levels and incomes rise. The United States is likely to continue as the major supplier, with Pakistan and Thailand possibly making substantial gains.

Feed grain imports continue under the present Government. Under the Shah, a great deal of emphasis was put on domestic production of livestock using subsidized, imported feed. Large poultry and dairy operations were established near urban areas with large Government subsi-

Table 15—Iran: Grain production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Barley:								
Production	1,000	1,000	1,200	1,290	1,440	na	na	na
Imports	467	264	370	500	700	NA	na	na
Consumption	1,467	1,264	1,570	1,790	2,140	na	7.3	3.0
Corn:								
Production	60	55	58	67	87	na	na	na
Imports	334	680	900	800	1,000	1.7	na	na
Consumption	394	735	958	867	1,087	na	—	—
Rice, milled:								
Production <sup>2</sup>	837	756	832	851	890	na	na	na
Imports	367	470	600	600	700	1.2	—	—
Consumption	1,204	1,226	1,432	1,451	1,590	na	32.8	31.3
Wheat:								
Production	5,300	4,750	5,500	5,900	6,400	na	na	na
Imports—								
Grain	1,350	1,500	1,800	2,300	3,000	.7	na	na
Flour <sup>3</sup>	53	19	187	21	35	NA	na	na
Consumption	6,703	6,269	7,487	8,221	9,435	na	167.6	185.9
Other grains:								
Production	10	10	10	12	17	na	na	na
Imports	283	0	122	100	200	NA	na	na
Consumption	293	10	132	112	217	na	—	—

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Does not include grains used for feed or transhipped.

<sup>2</sup>Milled rice equivalent.

<sup>3</sup>Wheat equivalent.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



dies. Large numbers of live animals, especially sheep, were imported and fed for short periods before slaughter. The meat and dairy products from these operations were largely consumed in the cities and became an important part of the diet. The present Government has sought to maintain prerevolution meat supplies and has thus continued importing feed grains.

Barley is the most important feed grain produced, but production has remained steady over the past two decades despite a doubling in demand. Sixty-six percent of the barley is grown as a dryland crop and relatively little barley area receives fertilizer or improved seed. Yields have nevertheless increased 29 percent since 1970, offsetting the steady decline in feed grain area from a high of 1.7 million ha in 1968 to an estimated 1.25 million ha in 1980. Production of corn and sorghum has increased steadily, but these two feed crops, only recently introduced to Iran, account for only 7 percent of total domestic feed grain production.

Barley has been important for dairy and sheep feeding operations. Iran's 1982 barley imports remained at around 400,000 tons. As large-scale oil exports resume, however, Iran is likely to expand its meat and dairy production to

keep pace with substantial urban population growth. This should result in barley imports of 700,000 tons in 1990. The major suppliers would be Canada, the EC, and Australia. The United States will probably have opportunities in this market, and Turkey is showing interest.

Iran's corn imports are larger than barley imports. This relationship is expected to continue. The poultry industry has been heavily emphasized and corn is the major feed. A large amount of corn is fed to the country's dairy herds. Under the Shah, corn imports were subsidized and, though the program's administration is in disarray, large corn imports are continuing. If expansion of the livestock industry occurs, corn imports should reach 1 million tons in 1990. The United States should remain the largest supplier, although South Africa's and Argentina's large exports will continue. Thailand also has potential.

Iran began importing sizable amounts of other feed grains, especially sorghum, in the late seventies. Although production is small, these imports have recently fallen substantially to only 122,000 tons in 1982. In 1985, imports of other feed grains should remain about 100,000 tons and increase to only 200,000 tons in 1990. Argentina will remain the major supplier of sorghum.

## Chapter 5—Projections: Livestock and Livestock Products

Rising per capita income has stimulated demand for livestock products in all the study countries. In addition, government subsidy policies have increased demand for selected commodities. Import growth will also depend on the success of local production projects (primarily in poultry and dairy), while import composition depends on policies and emerging tastes.

Annual per capita consumption varies considerably, from more than 75 percent of the U.S. level (UAE, Qatar, Kuwait) to less than 20 percent (Iran, Iraq, Algeria). Per capita consumption in 1990 will be much higher in Saudi Arabia and Libya, about 70 percent of U.S. levels. But, Iran, Iraq, and Algeria will remain at less than one-third the U.S. level, despite an emphasis on domestic production and a higher degree of dependence on imports (Iraq, Algeria).

Poultry is the fastest growing in terms of consumption of all meats in the region. By 1990, poultry will be the major meat consumed in most countries (Libya, Saudi Arabia, UAE, Kuwait, Iraq). Despite policies in all countries except Qatar to stimulate domestic production, only Libya is expected to be self-sufficient in 1990, although several countries (Saudi Arabia, UAE, Kuwait, and Iraq) will reduce their dependence on imports. Nevertheless, total imports will more than double between 1980 and 1990 (table 16).

Mutton and lamb are the traditional meats in the region. Relatively little growth in per capita consumption is projected, with the exceptions of Algeria and Iraq where dependence on imports is expected to rise.

Libya, Saudi Arabia, UAE, Kuwait, and Iran have strong preferences for fresh meat and import live animals for feeding and slaughter. Feeding is heavily subsidized in Saudi Arabia and Kuwait. Nevertheless, imports of frozen beef and mutton are projected to increase, since feeding and local production cannot meet the growing demand.

Government policies affect livestock product imports. Meat is subsidized in Libya, Saudi Arabia (poultry), and Iraq. There are also government programs to increase milk consumption in Algeria, Libya, and Saudi Arabia, which are among the world's largest milk importers. Eggs are covered by government programs in Algeria and Iraq, fostering imports.

Virtually all countries have programs to increase dairy production. Milk consumption in all the countries is low, and most nonfresh milk is reconstituted with domestically produced fresh milk. Only Saudi Arabia imports large quantities of fresh milk. Milk consumption is rising rapidly in all the countries. Because of production constraints, per capita consumption and imports of nonfresh milk will still rise in Algeria, Saudi Arabia, Kuwait, and Iraq.

Policies vary among the countries and shape import patterns in each. Algeria considers milk a staple (unlike meat) and imports heavily, making it the world's second largest importer of nonfresh milk in 1980. The region's other two large importers, Saudi Arabia and Libya, encourage milk consumption, and Saudi Arabia provides milk in school lunch programs, as does Kuwait.

Table 16—Eight study countries: Livestock product production, imports, and consumption

Commodity	Production			Imports			Consumption		
	Actual	Projected		Actual	Projected		Actual	Projected	
	1980	1985	1990	1980	1985	1990	1980	1985	1990
<i>1,000 tons</i>									
Meat:									
Beef and veal	341	424	548	126	319	515	467	743	1,063
Lamb and mutton	485	617	697	190	306	443	675	923	1,140
Poultry	383	560	892	366	726	946	749	1,286	1,838
Dairy products:									
Butter	77	90	102	140	239	303	217	329	405
Cheese	127	144	158	153	304	430	280	448	588
Fresh milk	2,807	3,723	4,580	40	68	80	2,847	3,791	4,660
Nonfresh milk	—	—	—	445	615	765	445	615	765
Eggs	270	434	550	140	272	384	410	706	934

— = Negligible.

Source: U.S. Dept. Agr., Econ. Res. Serv.



Egg consumption is relatively low (3-4 kg per capita annually) in Algeria, Iraq, and Iran, slightly higher (5-6 kg) in Libya and Saudi Arabia, and substantially higher (11-14 kg) in the UAE, Qatar, and Kuwait. Algeria, already the region's largest importer, will still be behind in per capita consumption in 1990, despite increases in consumption and growing imports fueled by consumer subsidies. By 1990, Iraq and Iran will raise consumption to 7-9 kg annually, and most of the other countries will be in the 11-14 kg range. Domestic egg production will increase substantially, but not enough to depress imports, in Algeria, Saudi Arabia, UAE, Iraq, and Iran, while domestic production will stabilize imports in Kuwait, and decrease them in Libya.

With the exception of poultry, the United States has not been a major livestock product supplier, although it exported some high-quality beef to Saudi Arabia and eggs to Iraq. European countries (primarily the EC), Argentina, and African countries account for most of the supply of live animals and red meat to the region. In addition, European countries (predominantly the EC) provide most of the dairy exports. Nevertheless, there are opportunities for greater U.S. market development in poultry exports (Algeria and Saudi Arabia), high-quality beef (UAE and Qatar), canned meat (Iraq), eggs (Algeria and Saudi Arabia), and possibly sheep (Saudi Arabia).

## Algeria

Algeria's egg and dairy imports are among the world's largest, while its meat imports are the smallest of all the study countries. This split has been a result of Government policy which has considered dairy products, but not meats, to be essential import items. Meat supplies are almost all locally produced. These supplies have not been adequate, however. Algeria's meat consumption is the lowest in all the study countries at 8 kg per capita and prices of meat are extremely high.

Dairy and meat imports should rise substantially during the eighties. The Government has reversed its seventies' policy of limiting food imports and is attempting to improve diets, eliminate shortages, and reduce consumer prices. The Government hopes that this can be done by investments in increased domestic livestock production, but this is a long-term solution. In the short term, demand is so great that the Government may be pressured to further increase its dairy imports and to begin importing large quantities of meat to stabilize domestic supplies and lower prices.

The smallest part of Algeria's livestock and livestock product imports is live animals. Algeria is the smallest importer of live animals among the study countries, along with Iraq. Algeria and Iraq do not import live animals for slaughter. Live cattle imports are mainly dairy cows used in Algeria's few modern dairies located near the major urban areas. Live imported sheep come mainly from Mali and Niger and are only for supplying the far southern regions of the country. Imports of live poultry are hatching chicks to be raised as broilers, but Algeria depends mainly on its

own breeding flocks and hatching eggs. These imports are relatively small.

Algeria's imports of live animals are not likely to increase. If meat availability is increased under the current 5-year plan, the increase will be through increased domestic livestock production and meat imports. Algeria's current plan calls for raising beef production to about 90,000 tons by 1990, and sheepmeat and poultry each to 70,000 tons (table 17). Live animals will not be imported for slaughter. Live cattle imports should increase to 10,000 head in 1985 and remain at that level through the decade, most being supplied by the EC. This growth is slow, even given Algeria's interest in expanding dairy production. If production is to be successful, dairy herds will have to become self-sufficient and bred for the Algerian climate, tending to discourage live cattle imports.

Live sheep imports will be even smaller than those of cattle, averaging only 1,000 head per year. These will come from Mali and Niger. The fastest growth in live animal imports will be in hatching chicks, with 5 million of these expected to be imported in 1985. This increase will result from Algeria's increased emphasis on poultry production. Live chick imports will begin to decrease in the late eighties as Algerian breeding capacity catches up with demand. Projected imports are very small compared to the other countries of the region, demonstrating Algeria's likely success in poultry production. Most of the chicks will be imported from the EC and Spain.

Algeria's meat imports are also low compared to the other countries, but this results from low consumption, not successful production. Beef, the largest meat import, has been imported only since 1975, and by 1979 amounted to slightly less than 10,000 tons, most of this being supplied by the EC and Argentina. Mutton and lamb imports are even less than beef, amounting to under 3,000 tons in 1979, while imports of other meats (poultry, pork, horse) are almost nonexistent. Meat is almost entirely imported by the animal feed office, ONAB, and goes only to the urban markets of Algiers, Oran, and Annaba. Small amounts of meat are also imported by Galeries Algériennes, a Government-owned department store, for distribution through its outlets to urban areas.

The major constraint to increased meat imports is not the lack of a market or a restrictive annual import allocation from the Ministry of Commerce, but rather the lack of facilities to import fresh and frozen meat. This will slow the growth in Algeria's meat imports initially, but a new emphasis on expanding such facilities will allow later growth. Beef imports of 34,000 tons in 1982 resulted from a trade agreement with Argentina. These should reach 75,000 tons in 1990 to help meet the pent-up demand and lower the high prices. This meat will continue to come from the EC and Argentina. Growth in lamb and mutton imports will be more modest, climbing from 16,000 tons in 1982 to 40,000 tons in 1990. Poultry could be the fastest growing meat import, however, as it is the least expensive meat on the world market. If the Government decides to

use imported poultry meat to upgrade diets and lower the high domestic poultry prices (currently at \$6 per kg), 1982 imports of 5,000 tons could leap to 90,000 tons in 1990. This trade has excellent potential for the United States, as well

as for the EC. No growth in imports of other fresh meat is expected. Small increases in prepared meat, mainly canned, will occur with imports expected to increase from their present 1,000-ton level to 1,400 tons in 1990. These will be

Table 17—Algeria: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	5.0	2.0	5.0	10.0	10.0	NA	na	na
Poultry imports	4,237.0	3,500.0	5,000.0	5,000.0	4,000.0	NA	na	na
Sheep imports	1.0	0.0	1.0	1.0	1.0	NA	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	44.0	50.0	51.0	63.0	88.0	na	na	na
Imports	10.0	15.0	34.0	50.0	75.0	1.5	na	na
Consumption	54.0	65.0	85.0	113.0	163.0	na	3.3	5.9
Lamb and mutton—								
Production <sup>1</sup>	55.0	47.0	49.0	60.0	70.0	na	na	na
Imports	3.0	3.0	16.0	25.0	40.0	NA	na	na
Consumption	58.0	50.0	65.0	85.0	110.0	na	2.5	4.0
Poultry—								
Production <sup>1</sup>	41.0	42.0	45.0	51.0	68.0	na	na	na
Imports	0.0	0.0	5.0	40.0	90.0	NA	na	na
Consumption	41.0	42.0	50.0	91.0	158.0	na	2.1	5.7
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	1.0	1.0	1.2	1.3	1.4	NA	na	na
Consumption	1.0	1.0	1.2	1.3	1.4	na	—	—
Total meat	154.0	158.0	201.2	290.3	432.4	na	8.0	15.7
Dairy products:								
Butter—								
Production	1.0	1.0	1.0	1.0	2.0	na	na	na
Imports	33.0	36.0	40.0	45.0	52.0	1.3	na	na
Consumption	34.0	37.0	41.0	46.0	54.0	na	1.9	2.0
Cheese—								
Production	1.0	1.0	1.0	2.0	3.0	na	na	na
Imports	12.0	11.0	15.0	20.0	30.0	.9	na	na
Consumption	13.0	12.0	16.0	22.0	33.0	na	.6	1.2
Fresh milk—								
Production	585.0	595.0	575.0	850.0	900.0	na	na	na
Imports	1.0	0.0	0.0	0.0	0.0	NA	na	na
Consumption	586.0	595.0	575.0	850.0	900.0	na	30.2	32.6
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	120.0	163.0	170.0	200.0	220.0	1.5	na	na
Consumption	120.0	163.0	170.0	200.0	220.0	na	8.3	10.9
Eggs—								
Production	18.0	19.0	21.0	30.0	45.0	na	na	na
Imports	41.0	41.0	50.0	60.0	70.0	1.6	na	na
Consumption	59.0	60.0	71.0	90.0	115.0	na	3.0	4.2

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



supplied by the EC and Argentina. The imports, together with the increases in local meat output, will still only allow per capita meat consumption of 15.7 kg in 1990.

Eggs, cheese, butter, and nonfresh milk are imported in large quantities. Algeria was by far the largest importer of eggs among the study countries throughout the seventies, importing 41,000 tons in both 1978 and 1980, compared to Saudi Arabia's 16,000 tons in 1978, the second largest amount. This placed Algeria third among the world's importers of eggs, far behind West Germany but only slightly behind Hong Kong. Although many of the eggs are hatching eggs for the broiler industry, most are for consumption. These eggs are imported and marketed by ONAB and mostly come from Spain. Egg imports will grow substantially, even with expansion in poultry production, partly because Algeria has emphasized broiler production at a time of growing demand for eggs. Thus, egg imports will likely grow to 60,000 tons by 1985, and then continue to increase at a slower rate, reaching 70,000 tons in 1990. Spain, the EC, and Hungary are likely to continue as the major suppliers, although there are excellent opportunities for the United States.

Algeria, already a large importer of dairy products, will likely significantly expand these imports. Algeria's population is growing rapidly and dairy products are becoming more popular. Further, since distribution and consumption of dairy products is limited to urban areas, growth in imports will be substantial as distribution expands to rural areas.

Algeria's cheese and butter imports are substantial, a preference which is a legacy from the French. Algeria in the seventies imported less cheese than Iran and Saudi Arabia, but more than did the other countries. Yet, Algeria still had very low levels of per capita consumption. The cheese is mostly imported from the EC and Austria. There is some local production of cheese, but it is too small to effectively compete with imports. The use of butter in Algerian cooking is so widespread that Algeria often imports more than Iran, making it one of the world's top importers. The butter comes from the EC and Eastern Europe.

The major factor limiting growth in cheese imports is Government import restrictions. There is, however, substantial demand, limited mainly to the urban areas. By 1990, cheese imports will be about 30,000 tons unless the Government decides to permit wide-scale distribution, in which case imports could be much larger. Butter imports will also increase, but will be slowed by subsidized cooking oil imports. Butter consumption will mainly be direct or in specialty cooking. Imports should increase, however, reaching 52,000 tons in 1990. Butter and cheese imports will be largely supplied by the EC, Austria, and Scandinavian countries.

Algeria's other large dairy import is nonfresh milk, both condensed and dried. Algeria is by far the region's largest importer of milk, supplied mainly by the EC, with large amounts coming from Canada. Only Italy imported more

nonfresh milk in 1980 than Algeria's 163,000 tons. The Algerians reconstitute nonfresh milk and mix it with their own locally produced milk. Nonfresh milk imports complement rather than substitute for local fresh milk. Milk is consumed mainly in urban areas by children and in cooking.

Nonfresh milk will remain Algeria's major dairy import. Although Algeria would like to increase domestic milk production, very substantial increases would be needed to slow the demand for nonfresh milk. Such an expansion is unlikely until the late eighties at the earliest. Fluid milk production is expected to be 900,000 tons in 1990. Increases in milk demand are expected, moreover, since milk drinking is becoming more popular and is being encouraged for nutritional reasons. Also, nonfresh milk is being introduced into rural areas, which have little refrigeration. These factors resulted in imports of 170,000 tons in 1982 and should allow 220,000 tons to be imported in 1990. Market shares in this trade will vary with relative prices. The EC has traditionally been Algeria's major supplier. But, by matching the EC price, Canada has moved into the lead position.

## Libya

Consumption of livestock products in Libya has been increasing rapidly since the midseventies. Total annual meat consumption in 1975 was only 29 kg per capita. In 1980, it reached nearly 43 kg, compared to nearly 100 kg in the United States (table 18). Libya is the highest per capita meat consumer in Africa, but growth in meat consumption should continue, since the saturation point has not been reached.

Libya's largest livestock product imports are live animals. Libya's expenditures on cattle were nearly \$100 million in 1980, the largest among the eight study countries. Libya, with programs to expand dairy output, imports dairy cows, mainly from the EC and Austria. About 20,000 head are imported yearly. Far larger, however, are imports of cattle for slaughter, accounting for 80 percent of the 210,000 head of cattle slaughtered in Libya in 1980. The imports provided 27,000 tons of beef. Cattle for slaughter come mainly from Eastern Europe, with the EC and Austria shipping many cull cattle.

Imports of live cattle will continue to grow. As incomes have grown in Libya, beef has become more popular relative to other meats. Per capita beef consumption increased from 9 kg in 1975 to 16 kg in 1980, a 77-percent increase. Lamb and mutton consumption increased only 20 percent over the same period, to 18 kg per capita. If beef consumption continues to increase at high rates, imports of cattle will increase since Libyans prefer to slaughter their own meat supplies. By the end of the decade, imports should account for half the cattle slaughtered. Imports of dairy cows can also be expected to continue. Imports of 220,000 head of cattle were needed to meet demand in 1982. This number is likely to reach 325,000 in 1990. Cull cows from Western Europe and cattle from Eastern Europe are likely to make up the bulk of the shipments. But Sudan could

also become an important supplier if Libya-Sudan relations improve. If Argentina and Australia promote cattle exports (as Australia has done with sheep), Libya could become an important market for them.

Libya spends almost as much on sheep imports as cattle imports, making Libya one of the region's largest sheep importers. Over half of the 3.2 million head of sheep slaughtered in 1980 were imported. Libya prefers to import live

Table 18—Libya: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	176.0	192.0	220.0	250.0	325.0	1.3	na	na
Poultry imports	11,320.0	8,000.0	12,000.0	15,000.0	20,000.0	NA	na	na
Sheep imports	1,909.0	1,800.0	2,000.0	2,300.0	3,000.0	2.0	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	31.0	33.0	40.0	50.0	94.0	na	na	na
Imports	7.0	16.0	6.0	5.0	5.0	.7	na	na
Consumption	38.0	49.0	46.0	55.0	99.0	na	16.2	20.0
Lamb and mutton—								
Production <sup>1</sup>	34.0	53.0	70.0	88.0	96.0	na	na	na
Imports	2.0	1.0	1.0	1.0	1.0	NA	na	na
Consumption	36.0	54.0	71.0	89.0	97.0		17.9	19.9
Poultry—								
Production <sup>1</sup>	20.0	26.0	29.0	69.0	138.0	na	na	na
Imports	—	—	—	—	—	NA	na	na
Consumption	20.0	26.0	29.0	69.0	138.0	na	8.6	28.2
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	0.0	.1	.2	.2	.2	NA	na	na
Consumption	0.0	.1	.2	.2	.2	na	—	—
Total meat	94.0	129.1	146.2	213.2	334.2	na	42.7	68.4
Dairy products:								
Butter—								
Production	—	—	—	—	—	na	na	na
Imports	4.0	8.0	7.5	10.0	20.0	1.1	na	na
Consumption	4.0	8.0	7.5	10.0	20.0	na	2.6	4.1
Cheese—								
Production	—	—	—	—	—	na	na	na
Imports	7.0	11.0	14.0	20.0	40.0	1.4	na	na
Consumption	7.0	11.0	14.0	20.0	40.0	na	3.6	8.2
Fresh milk—								
Production	104.0	124.0	136.0	220.0	300.0	na	na	na
Imports	.2	.2	0.0	0.0	0.0	NA	na	na
Consumption	104.2	124.2	136.0	220.0	300.0	na	41.1	61.4
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	36.0	54.0	60.0	65.0	40.0	.8	na	na
Consumption	36.0	54.0	60.0	65.0	40.0	na	17.9	8.2
Eggs—								
Production	15.0	16.0	20.0	25.0	32.0	na	na	na
Imports	.2	.2	.6	1.0	1.0	1.0	na	na
Consumption	15.2	16.2	20.6	26.0	33.0	na	5.4	6.8

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



sheep for feeding and slaughter rather than importing meat. Although beef consumption is growing more rapidly than that of lamb and mutton, sheepmeat is still the dominant meat in Libya and per capita consumption is growing. With the price of meat subsidized, incomes increasing, and population growing, sheep imports should continue to rise. This is especially true since most imported sheep are used to supply urban areas which are growing even faster than the general population. Sheep imports are projected at 3 million head in 1990, supplying about half the total number slaughtered as feeding of domestic herds increases. Because of trade agreements, Eastern European countries (especially Romania and Bulgaria) and Turkey will be the largest suppliers of sheep, with smaller numbers coming from Australia and Argentina.

One of Libya's most successful expansion programs has involved its poultry industry. Like most of the other countries in the region, Libya has funneled resources into poultry production, increasing production from 6,000 tons in 1975 to 26,000 tons in 1980. The number of hatching chicks imported by Libya has increased; most of them are raised as broilers. Chicks are provided to poultry operations at a 50-percent subsidy. Libya is having some difficulty expanding its breeding farms; if poultry output is to expand, more imports of chicks will be needed. Imports reached an estimated 12 million head in 1982 and will grow slowly to 20 million head in 1990. The EC has dominated this market and is likely to continue to do so, with growing competition from Eastern Europe. By 1990, this expansion will help Libya achieve self-sufficiency in poultry output at nearly 140,000 tons.

Libya's consumption of meats has been growing rapidly, but its imports of meat have been declining. Until the mid-seventies, Libya was importing sizable amounts of beef, lamb, and mutton, and smaller amounts of poultry. Beef imports were the largest, averaging over 10,000 tons annually, with lamb and mutton imports at 2,000 to 3,000 tons per year. These imports, rather than continuing to increase as in the other countries of the region, began to decline in the mid-seventies due to rapidly growing live animal imports. The Libyan preference for local slaughter has been so great that live animals have almost completely displaced meat imports. Beef imports dropped to an estimated 6,000 tons in 1982, and are expected to decline further to 5,000 tons by 1985 and maintain that level. Lamb and mutton imports should average no more than 1,000 tons annually. Poultry and other fresh and frozen meat imports will be negligible. Only about 200 tons of canned meat will be imported annually, mainly for distribution to the oil fields. These projections assume that live animals will be available on the world market.

Egg imports, like meat imports, grew slowly in the early seventies, then began a slow decline by the middle of the decade, averaging less than 1,000 tons annually. Most egg imports have been for consumption. Increased demand for eggs has been met by expanded local production, which reached nearly 16,000 tons in 1980. This trend should

continue, and egg imports should remain somewhat less than 1,000 tons annually.

Cheese imports, although currently small, are expected to rise. Cheese is a relatively new food in Libya, largely imported for European workers. These imports have introduced cheese to the Libyans and created local demand. Cheese imports, tripling during the seventies, will grow substantially as cheese becomes more common to the Libyan diet. Imports of cheese are expected to reach 40,000 tons by 1990. The EC is likely to be the largest single supplier.

Libya's butter imports are also increasing, although they are minor when compared to Iran or Algeria. Libyans prefer to cook with olive oil, used as an almost complete substitute for butter, even as a spread on bread. Still, butter imports are expected to continue to increase because of the presence of European workers and because of the low cost of EC butter. Imports will reach 20,000 tons in 1990.

Libya has been a large importer of nonfresh milk. Its imports of 54,000 tons in 1980 placed it behind Algeria and Saudi Arabia, but ahead of other countries in the region. In Libya, there have long been programs to improve the nutritional content of diets, including provision of milk to children and mothers. With the high birth rate, increasing amounts of milk have had to be imported. Milk is now becoming acceptable to adults. However, Libya is placing massive resources into domestic dairy production, so imports of nonfresh milk should grow much more slowly than demand. Fluid milk production is expected to more than double by 1990 to 300,000 tons. Imports of only 60,000 tons of nonfresh milk in 1982 are thus expected to be no more than 65,000 tons by 1985. More dairies should become fully operational later in the decade, lowering imports to about 40,000 tons in 1990. The EC is likely to remain the principal supplier.

## Saudi Arabia

The largest importer of livestock products in the Middle East is Saudi Arabia, with imports valued at over \$100 million in 1980. Saudi Arabia's per capita meat consumption in 1980 was 42 kg, of which 36 kg were imported (table 19). The 1975 consumption level was 17 kg. Saudi Arabia is one of the region's largest importers for most individual commodities. Substantial growth in overall meat consumption can be expected because livestock products are just now being widely introduced outside the major urban areas with the development of a modern marketing infrastructure. With the growing affluence in the country, per capita consumption will also continue to rise as supplies become available. Much of the increase in consumption will be met by the rapidly expanding domestic industry, but the rest will be met by higher imports.

Much of Saudi Arabia's meat is imported live, partly because of the lack of refrigeration in rural areas and partly because of Islamic slaughter practices. Economic reasons are also important: live animals are fed in Saudi Arabia at

Table 19—Saudi Arabia: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	113	180	120	175	200	1.5	na	na
Poultry imports	12,130	6,186	13,000	15,000	18,000	NA	na	na
Sheep imports	3,750	5,260	5,400	5,600	6,000	1.6	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	23	25	30	40	50	na	na	na
Imports	22	40	85	130	200	2.0	na	na
Consumption	45	65	115	170	250	na	6.5	17.9
Lamb and mutton—								
Production <sup>1</sup>	62	75	95	110	128	na	na	na
Imports	18	24	32	36	42	1.9	na	na
Consumption	64	99	127	146	170	na	10.1	12.1
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	4	6	7	12	18	NA	na	na
Consumption	4	6	7	12	18	na	.6	1.3
Poultry—								
Production <sup>1</sup>	20	50	105	165	225	na	na	na
Imports	128	193	270	330	380	1.6	na	na
Consumption	148	243	375	495	605	na	24.3	43.2
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	9	8	21	30	40	NA	na	na
Consumption	9	8	21	30	40	na	.8	2.8
Total meat	270	421	645	853	1,083	na	42.1	77.4
Dairy products:								
Butter—								
Production	2	2	2	3	5	na	na	na
Imports	16	23	27	38	50	.9	na	na
Consumption	18	25	29	40	55	na	2.5	3.9
Cheese—								
Production	—	—	—	—	—	na	na	na
Imports	32	39	50	75	110	1.0	na	na
Consumption	32	39	50	75	110	na	3.9	7.9
Fresh milk—								
Production	210 <sup>2</sup>	224	310	340	390	na	na	na
Imports	30	36	45	60	70	NA	na	na
Consumption	240	260	355	400	460	na	26.0	32.9
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	69	88	100	135	175	1.0	na	na
Consumption	69	88	100	135	175	na	8.8	12.5
Eggs—								
Production	28	40	56	93	120	na	na	na
Imports	16	17	35	45	65	NA	na	na
Consumption	36	57	91	138	185	na	5.7	13.2

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.<sup>2</sup>1979.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production*, 1972-81, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



a 50-percent feed subsidy, they are fed in facilities funded by highly subsidized loans, and they are purchased on trips financed by the Government.

Cattle imports make up a large part of this trade, 90 percent of which are for slaughter. The rest are dairy cows. Cattle are shipped mainly from Somalia, Sudan, and Ethiopia and account for nearly 75 percent of all cattle slaughtered in Saudi Arabia. Although more beef is imported frozen, domestic slaughter provided over 25,000 tons of beef in 1980. Cattle imports should increase substantially, as incomes rise and beef becomes more popular. Large-scale development projects in Sudan financed by Saudis should assure a continued supply of cattle. Large-scale feedlots are being built to accommodate more live imports. Thus, imports should rise to 200,000 head in 1990.

Saudi Arabia is the world's largest sheep importer. Imported sheep in 1980 provided over 60,000 tons of meat, nearly triple the amount of imported lamb and mutton. Imported sheep are fed for short periods and then slaughtered. Many sheep, probably over 1 million head annually, are slaughtered as part of the Hajj religious observances. Many other sheep are sent into rural areas where refrigeration is not widespread.

The eighties should see continued growth in sheep imports. Lamb and mutton, the traditional meats of Saudi Arabia, are very popular, especially in rural areas. Many Saudis have invested overseas to assure continued supplies. Imports in 1982 were 5.4 million head and should reach 5.8 million head by 1985 as growth begins to slow. Most imports will come from Sudan, Somalia, and Australia, with smaller amounts coming from about 20 other countries. The Saudis have recently indicated interest in purchasing American sheep.

Saudi Arabia imports a number of live chicks for use in domestic broiler and egg production. Chick imports are generally preferred to those of hatching eggs; though the Government pays for both chick and egg imports, travel funds are provided only for chick-buying trips. These subsidies are provided as part of the Government poultry promotion program.

This poultry promotion program should continue to increase demand for imported chicks. Imports should reach 18 million in 1990. The rapidly declining death rate of chicks resulting from better management and technology will enable output of broilers to increase more rapidly than chick imports. The EC and Jordan should continue as the major suppliers of chicks to Saudi Arabia, but the United States could probably capture a share of this market.

Although the meat provided by live animal imports is substantial, it is by no means enough to meet the huge demand. Beef imports of 40,000 tons in 1980 were more than double the amount provided by slaughtered imported cattle, and accounted for nearly 60 percent of all beef consumed in Saudi Arabia. Beef consumption is still not as large as poultry or mutton consumption, but it is growing rapidly. Changing tastes and rising incomes are responsible.

Current beef consumption is only about 7 kg per capita, but hamburgers and steak are becoming much more popular, partly because of a growing number of fast food chains in the country. Saudi Arabia's 40,000 tons of imports place it among the world's top 10 importers of beef, not far behind Japan and Greece. But Saudi imports are just beginning to rise, while many other importers are beginning to level off. Unfavorable conditions for domestic production will lead to imports of 200,000 tons by 1990. Most imports will come from Australia, Argentina, and the EC. India should also supply some amount, and the Sudan is developing a capability to export frozen and chilled beef as well as cattle. The United States should continue to supply small amounts of high-quality beef and veal, mainly for hotels.

To supplement the meat obtained from the slaughter of live sheep, Saudi Arabia has imported frozen lamb and mutton. The amounts imported during the seventies were about equivalent to beef imports, but in recent years they have not grown as rapidly. Imported lamb and mutton provide less than half as much meat as do live sheep imports, but Saudi Arabia is still the world's fourth largest importer of sheepmeat after Iran, the Soviet Union, and Japan.

Sheepmeat consumption should continue to rise in Saudi Arabia as diets are upgraded, though the continued growth in live sheep imports will tend to dampen the growth in frozen sheepmeat imports. However, with a limited capacity for live sheep imports, Saudi Arabia's lamb and mutton imports should still grow slightly to 42,000 tons in 1990. This trend represents a much slower growth than for beef imports. These imports will be supplied by New Zealand, Australia, India, and Argentina.

Poultry is consumed in greater quantities than beef and mutton combined, and is mainly supplied to Saudi Arabia by imports. Saudi Arabia produced about 50,000 tons of poultry in 1980, a substantial increase over the seventies. But, in 1980, an additional 193,000 tons were imported to meet demand. Thus, Saudi Arabia is the world's largest poultry importer, if intra-EC trade is excluded. Saudis consumed 24 kg of poultry meat per capita in 1980, about the U.S. level. This high consumption can be attributed to a number of factors: poultry is the least expensive of all meats (its price is kept low in Saudi Arabia through price subsidies); fast food outlets, major users of poultry imports, have increased the convenience and popularity of chicken; and poultry is a versatile meat used in both traditional and new dishes.

Government emphasis on poultry production raised yearly output from 10,000 tons in the early seventies to over 100,000 tons in 1982. Rapid growth should continue since there is no indication that the Government will discontinue its programs. Output is projected at 225,000 tons in 1990. The growth of poultry imports should slow, but not significantly until the end of the decade, resulting in expected imports of 380,000 tons in 1990. Eastern Europe, currently a major supplier, should maintain its current level of exports, with most of the growth going to Brazil, the United States, and the EC.

Unlike most other study countries, Saudi Arabia imports large amounts of variety meats. Modern supermarkets are being built all over the country. And, a growing proportion of the population is becoming familiar with Western foods, making prepared luncheon meats for sandwiches more popular. Imports of these other fresh and frozen meats, presently at about 7,000 tons annually, will grow rapidly as more supermarkets are constructed. Imports should rise to 18,000 tons in 1990. Australia, the EC, and perhaps some southern African countries will be the major suppliers. The United States could also be an occasional supplier.

Demand for canned meats is high in areas far removed from refrigeration. These meats are popular with Bedouins and foreign workers in isolated oilfields. A great deal of canned meat, especially pork, is also imported into foreign enclaves and never accounted for by Saudi customs. Canned meat imports should rise to 40,000 tons in 1990 as availability becomes more widespread and canned meats become more popular. The EC will supply most imports if past trends hold, but the United States has also been a major supplier. This pattern could continue.

Saudi Arabia is already a major importer of many meats and such imports are expected to grow substantially. And, domestic production of meat, especially poultry, is expected to rise sharply. Still, when the projected imports and domestic production are tallied with population and income growth, per capita consumption in 1990 will be only 77 kg.

Western influence has changed Saudi preferences for livestock products. For instance, many Saudis eat eggs for breakfast, instead of the traditional bread and beans. Most eggs consumed in Saudi Arabia are produced domestically, approximately 40,000 tons in 1980. Egg production is part of the overall emphasis given poultry production, and many egg-laying operations have been established in the highlands around Mecca and Medina where the climate is relatively moderate. Still, these operations have not been productive enough to meet demand and 17,000 tons of imported eggs were needed in 1980 to allow per capita consumption of 5.7 kg, less than half the U.S. level.

Local production of eggs is likely to continue its boom during the eighties as Government subsidies continue. Production by 1990 is projected to reach 120,000 tons. But, growth in demand for eggs should outstrip production and imports will continue to increase. Prices should continue low, currently about \$2 per dozen. Imports should grow to 65,000 tons in 1990. The United States has recently become the largest single supplier of eggs to Saudi Arabia, but stiff competition from the EC, Brazil, Bulgaria, and Hungary can be expected.

Saudi Arabia was the world's third largest importer of milk, the world's fifth largest importer of cheese, and the world's eighth largest importer of butter in 1980. Combined dairy imports were valued at \$360 million in 1980, more than double the total U.S. dairy exports in that year.

Saudi Arabia's largest dairy import is milk. Most milk is imported dried, about 65 percent, but substantial quantities of condensed and fresh milk are also imported. If intra-EC trade is excluded, Saudi Arabia is the world's largest importer of fresh milk with such imports valued at \$40 million in 1980. These massive imports are needed because local supplies are extremely limited and expensive. During most of the year, and in most areas, Saudi Arabia does not have the pasture necessary to support large dairy herds.

Demand for milk should continue to grow. Milk consumption in Saudi Arabia, introduced by Westerners, has been used to improve the diets of children. It is provided with school lunches. By 1990, requirements can be expected to reach 70,000 tons of fresh and 175,000 tons of nonfresh milk as per capita consumption rises. The EC has a near monopoly in this market and, if its pricing policies continue, is likely to maintain its position.

Cheese imports accounted for about half the value of Saudi Arabia's dairy imports in 1980. Only the EC, the United States, Japan, and Iran import more cheese than Saudi Arabia. Nearly all cheese is imported and sold to supermarkets and fast food outlets. With increasing demand for convenience foods, cheese consumption is rising and reached 3.9 kg per capita in 1980, about half the U.S. level.

Cheese imports will grow because of rising population and per capita consumption. Domestic production should be negligible because of physical constraints. Imports can be expected to grow to 110,000 tons by 1990. The EC will dominate this trade but New Zealand, Australia, and Bulgaria are likely to make substantial sales.

Saudi Arabia is also a large importer of butter, purchasing over \$50 million worth in 1980. The 23,000 tons imported in 1980 gave a per capita consumption of 2.5 kg, higher than U.S. levels but lower than European levels. Butter is used mainly for cooking, although it is also put on rice. Cooking oil is, of course, the main substitute for butter, and margarine is being introduced. Butter is still favored for many uses, however. With its price controlled, a 20-percent rebate provided to many retailers, and rising incomes, butter use should continue to increase. Imports are projected to grow to 50,000 tons by 1990. This growth, although relatively slow, will increase per capita consumption to nearly 4 kg annually. The EC, New Zealand, and Australia will be the major suppliers to Saudi Arabia, but the United States may have some opportunities in this market.

## United Arab Emirates

The UAE in 1980 had the second highest per capita meat consumption in the Middle East; only Kuwait consumes more meat per capita than does the UAE (table 20). Consumption in the UAE has nearly doubled since 1975. Even though it has a relatively small population, the UAE imports large amounts of livestock products. This is ex-



Table 20—UAE: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	4.0	1.7	4.0	5.0	8.0	NA	na	na
Poultry imports	555.0	950.0	2,000.0	2,500.0	3,000.0	NA	na	na
Sheep imports	250.0	535.0	800.0	900.0	1,950.0	1.5	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	3.0	3.0	5.0	6.0	10.0	na	na	na
Imports	3.0	5.0	5.9	7.1	9.5	1.2	na	na
Consumption	6.0	8.0	10.9	13.1	19.5	na	9.4	10.8
Lamb and mutton—								
Production <sup>1</sup>	4.0 <sup>2</sup>	6.0	10.0	14.0	20.0	na	na	na
Imports	7.0	20.0	22.0	24.0	29.0	1.6	na	na
Consumption	11.0	26.0	32.0	38.0	49.0		30.6	27.2
Poultry—								
Production <sup>1</sup>	4.0 <sup>2</sup>	4.0	22.0	28.0	38.0	na	na	na
Imports	21.0	34.0	34.0	36.0	38.0	1.7	na	na
Consumption	25.0	38.0	56.0	64.0	76.0	na	29.4 <sup>3</sup>	42.2
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	.8	4.0	4.5	5.5	7.0	NA	na	na
Consumption	.8	4.0	4.5	5.5	7.0	na	4.7	3.9
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	1.8	4.0	5.0	7.0	9.0	NA	na	na
Consumption	1.8	4.0	5.0	7.0	9.0	na	4.7	5.0
Total meat	44.6	80.0	108.4	127.6	160.5	na	78.8	89.2
Dairy products:								
Butter—								
Production	—	—	—	—	—	na	na	na
Imports	3.2	4.5	5.0	6.0	7.5	1.3	na	na
Consumption	3.2	4.5	5.0	6.0	7.5	na	5.3	4.1
Cheese—								
Production	—	—	—	—	—	na	na	na
Imports	1.9	3.4	4.5	8.5	18.0	1.4	na	na
Consumption	1.9	3.4	4.5	8.5	18.0	na	4.0	10.0
Fresh milk—								
Production	10.0 <sup>2</sup>	12.0	17.0	25.0	38.0	na	na	na
Imports	2.1	3.1	4.0	4.0	4.0	NA	na	na
Consumption	12.1	15.1	21.0	29.0	42.0	na	17.8	23.3
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	21.0	29.0	32.0	39.0	58.0	1.4	na	na
Consumption	21.0	29.0	32.0	39.0	58.0	na	34.1	32.2
Eggs—								
Production	2.0	2.0	4.0	6.0	9.0	na	na	na
Imports	4.2	10.0	12.0	14.0	17.0	1.6	na	na
Consumption	6.2	12.0	16.0	20.0	26.0	na	14.1	14.4

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.<sup>2</sup>1979.<sup>3</sup>Excludes transshipments.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

pected to continue. Imports will more than double by 1990, mainly because of large population growth. Since incomes have already pushed consumption very high, no more than a modest increase in per capita meat consumption to 89 kg in 1990 is expected.

Live animals will constitute a large part of increased imports. The UAE has recently begun importing dairy stock to increase milk output. Subsidies are provided for facilities and feed. Dairy cow imports will continue. Milk production, however, is not expected to increase greatly. About 4,000 head were imported in 1982; 8,000 head will be imported in 1990.

A growing number of hatching chicks will be imported for an expanding poultry industry. Imports should grow relatively slowly—from 2 million chicks in 1982 to 3 million in 1990—as domestic breeding flocks meet an increasing share of the demand.

The main live animal import into the UAE, however, is sheep for slaughter. Lamb and mutton are the most widely consumed meats in the UAE, and slaughter from live sheep imports provided nearly 6,000 tons of meat in 1980. The Government provides a 50-percent feed subsidy for sheep which are usually fed several months before slaughter. The Government also provides free port facilities to handle imports, which helps hold prices down. With population expected to soar from an influx of immigrants and workers, imports of live sheep should grow. The demand for fresh meat is stronger than that for frozen, which will mean a greater proportion of live animals. Together, these factors should generate live sheep imports of 1.95 million head by 1990. Turkey is the largest supplier of sheep, with stiff competition from Syria. Australia is likely to become a major competitor.

Meat supplied from live sheep met only about 20 percent of the demand for lamb and mutton in 1980. The rest, over 20,000 tons, was imported frozen. Further growth in demand for lamb and mutton is expected, but most will be met through the live sheep imports. There will be only small increases in frozen sheepmeat imports. Imports in 1982 of 22,000 tons were only slightly above the 1980 level; such imports will reach only 29,000 tons in 1990. India, Australia, and New Zealand will supply most imports.

Poultry consumption is near that of sheepmeat. With the domestic poultry industry just beginning, almost all of this poultry is imported frozen. Chicken is popular, especially among less affluent immigrant workers. Most chicken is sold for home preparation, but a growing amount is marketed in fast food outlets and by street vendors.

The UAE poultry trade depends on a number of factors. The population is booming, both because of the large natural increase and the immigration of temporary workers and refugees. Although per capita consumption of poultry was already high at 30 kg in 1980, it will probably rise higher. However, domestic poultry production is expected to increase significantly, reaching nearly 40,000 tons of

broiler output in 1990. Much of the rapid growth in imports (over 40 percent between 1979 and 1980) results from the transit trade to Iran; with over 10,000 tons shipped annually, this should decrease when the war with Iraq ends. These two trends—increased production and growth in transit trade—have thus far offset each other. Thus, 1982 imports maintained the 1980 level of 34,000 tons. By 1985, local production and declining transshipments will increase local supplies. This increase will offset most increases to domestic demand, leaving only 36,000 tons to be imported, growing to 38,000 tons in 1990. Suppliers will have a great deal of competition in this market, with quality and price being important.

UAE beef consumption is low. Very little beef is produced locally, so almost all that is consumed is imported chilled or frozen. Consumption is limited mainly to hotels, expensive restaurants, the very wealthy, and Western expatriate workers. This consumption pattern is not expected to change; beef imports will remain small relative to imports of other meats. Imports are expected to grow to 9,500 tons in 1990. Most will be expensive cuts, indicating market potential for the United States.

The UAE imports significant quantities of dairy products and eggs, amounting to well over \$60 million in 1980. Milk accounts for over half these imports. Of the approximately 32,000 tons of milk imported in 1980, only about 3,000 tons were imported as fresh milk, the rest being equally divided between dry and condensed milk. Milk's popularity is growing, but production is nominal. Fresh milk imports are expected to remain at about the same level, since production is growing and should reach nearly 40,000 tons by 1990, but dry and condensed milk imports will increase substantially to meet the even faster growth in demand. Imports will grow to 58,000 tons in 1990. The EC will dominate this trade.

UAE egg imports in 1980 were valued at \$13 million. Per capita consumption of eggs rose from only 3 kg in 1975 to 14 kg in 1980. Most were imported, although domestic production has been growing. Egg production is seasonal, however, because of the hot summers. Thus, even as egg production expands, seasonal imports will be needed. Imports will continue to rise, since growth in domestic output will probably not be adequate for the growing demand. Egg imports are projected to reach 17,000 tons in 1990. This level, together with 9,000 tons of production in 1990, will allow per capita consumption to remain at 14 kg. India and Swaziland have been the largest suppliers of eggs. Whether this will continue will depend largely on the marketing efforts of other suppliers.

Growth of cheese consumption has been slower than most other commodities. Per capita consumption was only 3 kg in 1975; by 1980, it had risen to only 4 kg. Consumption is relatively low partly because the large South Asian community does not eat cheese. There are, however, a growing number of Iranians who do consume large amounts of cheese; these new arrivals encouraged 1982 imports of 4,500 tons. As demand grows, imports will



increase to 18,000 tons in 1990, bringing per capita consumption to 10 kg. The EC, Australia, and New Zealand are likely to supply the bulk of these imports.

Per capita consumption of butter in 1980 was only slightly higher than the amount consumed in 1975. Butter consumption is projected to decrease slightly by 1990. Growth in butter imports is tied to the population growth rate, not increased use. Imports are expected to reach 7,500 tons in 1990. The EC, Australia, and New Zealand are expected to be the main suppliers.

## **Qatar**

Per capita meat consumption was 74 kg in 1980, nearly double the 1975 level (table 21). Qatar has fewer than 300,000 people, however, and meat imports were less than 20,000 tons including the meat from imported live sheep. Qatar encourages population growth and is attracting immigrants from other Middle East countries. These immigrants and continued increases in consumption rates will more than double the demand for livestock products by 1990.

Qatar imports only a few hundred cattle annually, mainly for its small dairy operations. These imports are not expected to grow much. Live sheep imports provide over 60 percent of the total red meat consumed in the country. The 375,000 sheep imported in 1980 provided nearly 1.5 head per person, a much higher per capita rate than in any other Middle East country. Australia has been the largest supplier of these sheep in recent years, but Syria has sometimes shipped large numbers of sheep.

Increases in population will further increase sheepmeat demand. The Government provides large feed subsidies and a rebate of \$10 per head to the importer, which keeps sheep imports attractive. Imports in 1982 reached 420,000 head. Qatar is just beginning to enter another substantial boom period, both economically and in terms of population growth. So, 1990 imports should reach 600,000 head. Australia will dominate this trade as it does in the other Persian Gulf countries.

Live sheep imports are not the major source of meat in Qatar. Poultry has become the major meat, both in consumption and imports. Per capita consumption rose from 14 kg in 1975 to 37 kg in 1980, while poultry meat imports rose from 2,000 tons to nearly 10,000 tons. Nearly all of the poultry consumed is imported since the domestic industry is in infancy. The Government neither encourages imports with subsidies nor discourages them by charging duty.

Poultry meat imports growth can be expected. Production of poultry will not likely reach more than 7,000 tons by the end of the decade and the cost differential between poultry and red meat should lead to further increases in per capita poultry consumption. Refugees from the Iraq-Iran War are responsible for the recent surge in imports, a factor which led to 1982 imports of 12,000 tons. This level will

rise to 20,000 tons in 1990. There is a great deal of competition in this market and the market is small enough so that small suppliers can capture large market shares. Many suppliers will include the United States, the EC, Brazil, Hungary, and South Africa.

Poultry is the most widely consumed meat, though sheepmeat is the most preferred. Most sheepmeat comes from imported live sheep, but demand for lamb and mutton is so high that a growing amount of frozen sheepmeat has been imported. About a third of the lamb and mutton consumed in the country was imported frozen in 1980. Fresh meat is preferred to frozen and higher prices are paid for it. But demand for fresh meat is growing so rapidly that, in addition to increased live sheep imports, lamb and mutton imports will rise during the eighties. Imports in 1982 were slightly larger than in 1980 and 1981 at 3,000 tons, but faster growth can be expected with 1990 imports reaching 6,000 tons. Most will be supplied by Australia and New Zealand, who have cultivated the entire Persian Gulf market. But quantities are small enough so that countries like China and India will sometimes have a large market share.

Imported beef is mainly consumed in hotels and fine restaurants rather than in households; imports totaled only 1,200 tons in 1982. Most import expansion will rely on continued growth in the hotel and restaurant business and, to a lesser extent, on increased household consumption. Growth should be relatively slow, resulting in imports of 2,500 tons in 1990. The United States could enter this market, which demands high-quality beef for the hotels and restaurants. Imports come mainly from Australia.

Imports of eggs and dairy products have also risen substantially. Consumption of eggs rose from 7.5 kg in 1975 to over 11 kg per capita in 1980; all were imported. Eggs are becoming popular; consumption levels are among the highest in the Middle East and only a third lower than in the United States. Egg production is just beginning and will not have any appreciable effect on supply until the end of the decade. Continued increases in per capita consumption and large increases in population will more than offset increases in production. Egg imports will increase to 6,000 tons by 1990. Most will be supplied by Jordan and Lebanon, both of whom have excess production. But the United States may be able to use container shipping to supply part of the market.

The most valuable dairy product imported is milk, with 1980 imports of nearly \$20 million. The value is split fairly evenly between dry and condensed milk, with only a small amount of fresh cream, imported for hotels. Qatar has a small dairy herd, 4,000 head at most, and production falls far short of demand. Demand is soaring though milk production is likely to grow. Schools and health programs provide milk to an increasing number of children; adult consumption is rising. Imports of 10,500 tons should be needed in 1985 to meet demand, half dry and half condensed. Larger portions of dry should be imported for reconstitution with local fresh milk, resulting in imports

Table 21—Qatar: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head					Coefficient	Kg/yr	
Live animals:								
Cattle imports	0.5	0.4	0.3	0.3	0.3	NA	na	na
Poultry imports	0.0	14.0	0.0	0.0	0.0	NA	na	na
Sheep imports	330.0	375.0	420.0	500.0	600.0	1.4	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production	—	—	—	—	—	na	na	na
Imports	.7	1.0	1.2	1.5	2.5	NA	na	na
Consumption	.7	1.0	1.2	1.5	2.5	na	3.7	5.0
Lamb and mutton—								
Production <sup>1</sup>	5.0	6.0	6.3	7.5	9.0	na	na	na
Imports	.9	2.7	3.0	4.5	6.0	NA	na	na
Consumption	5.9	8.7	9.3	12.0	15.0	na	32.2	30.0
Poultry—								
Production	—	—	5.0	6.0	7.0	na	na	na
Imports	6.0	10.0	12.0	15.0	20.0	1.6	na	na
Consumption	6.0	10.0	17.0	21.0	27.0	na	37.0	54.0
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	.1	0.0	.2	.2	.2	NA	na	na
Consumption	.1	0.0	.2	.2	.2	na	0.0	.4
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	.2	.2	.3	.3	.4	NA	na	na
Consumption	.2	.2	.3	.3	.4	na	.7	.4
Total meat	12.9	19.9	25.3	35.0	45.1	na	73.7	90.1
Dairy products:								
Butter—								
Production	—	—	—	—	—	na	na	na
Imports	1.9	1.8	3.5	3.8	4.2	1.2	na	na
Consumption	1.9	1.8	3.5	3.8	4.2	na	6.7	8.4
Cheese—								
Production	—	—	—	—	—	na	na	na
Imports	1.0	5.2	6.0	8.2	11.5	1.4	na	na
Consumption	1.0	5.2	6.0	8.2	11.5	na	19.3	23.0
Fresh milk—								
Production	5.0	6.0	8.0	12.0	16.0	na	na	na
Imports	.2	0.0	.5	.5	.7	NA	na	na
Consumption	5.2	6.0	8.5	12.5	16.7	na	22.2	33.4
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	6.1	8.3	9.0	10.5	13.0	1.2	na	na
Consumption	6.1	8.3	9.0	10.5	13.0	na	30.7	26.0
Eggs—								
Production	—	—	1.0	3.0	4.0	na	na	na
Imports	2.4	3.0	3.4	4.0	6.0	NA	na	na
Consumption	2.4	3.0	4.4	7.0	10.0	na	11.1	20.0

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



of 13,000 tons in 1990. The EC is likely to remain the dominant supplier.

Qatar spent about half as much on cheese imports in 1980 as it did on milk. Per capita consumption increased from 3 kg in 1975 to nearly 20 kg in 1980, more than double the U.S. level. Rapidly growing population should lead to continually rising imports, from 6,000 tons in 1982 to 11,500 tons in 1990. The EC is likely to continue domination of this market.

The 1979 butter imports of \$3 million fell to \$1.8 million in 1980. But such imports have been trending generally upward since the midseventies. Per capita consumption of butter is high, more than double U.S. levels, since butter is used extensively in cooking. Butter imports will continue to grow with population, although little growth is expected in per capita consumption. Imports should grow to 4,200 tons by 1990. The EC has the best chance of supplying this butter through its established marketing channels, although New Zealand will also be active.

## Kuwait

Kuwait's per capita meat imports were over 90 kg in 1980, the highest in the world. Much is transshipped, however, putting per capita meat consumption in 1980 at 80 kg, compared with nearly 100 kg per capita in the United States (table 22). Meat consumption is the highest of all the eight study countries. Large quantities of meat and dairy products are sold out of the duty-free zone of Kuwait City in small lots, and shipped to Iraq, Saudi Arabia, and Iran.

Kuwait has attempted to increase its domestic output of livestock products since the midseventies. A great deal of this emphasis has been placed on modern dairy and poultry production operations. Live animals have been imported to support these projects. Dairy cows are imported from Australia and the EC. These imports have averaged about 2,000 head per year. Kuwait also imports a growing number of hatching chicks for its expanding poultry operations.

Kuwait also imports large numbers of sheep and cattle for slaughter. They are fed for short periods, aided by the 50-percent feed subsidy. These imports constitute nearly 30 percent of total meat imports. Live animals are imported by the Government, slaughtered in public abattoirs, and then sold to cooperative stores at prices averaging 20 percent below cost.

Most cattle are imported for slaughter. The very high per capita income in Kuwait and the growing number of Western restaurants have increased beef demand. While slightly more beef is imported frozen, beef from domestically slaughtered, imported cattle is growing. The volume reached over 8,000 tons in 1980. Cattle imports for breeding and dairy are expected to grow slowly, with totals reaching no more than 5,000 head per year during the eighties. Imports of cattle for slaughter will grow sub-

stantially, however. Total cattle imports should reach 70,000 head in 1990. There will be competition among Australia, Sudan, and numerous southern African countries.

Kuwait's sheep imports are much larger than cattle imports in terms of numbers and meat. Kuwait imports slightly more than one sheep per person per year, an amount exceeded only by Qatar. These sheep supply nearly 30,000 tons of meat, exceeding lamb and mutton imports. Lamb and mutton are the traditional meats of Kuwait and are widely consumed, although poultry consumption is about equal. Imports should continue to grow as population increases while per capita consumption stabilizes. Imports, 2 million head in 1982, should reach 2.5 million head by 1990. Australia, now almost the sole supplier, should continue to dominate the market.

The outlook for hatching chick imports is not as good as for cattle and sheep. Kuwait is developing hatcheries to supply its broiler and egg operations as part of its poultry expansion program. Growth in hatching chick imports will thus be slow. Imports can be expected to grow to 12 million in 1990. This places Kuwait far below most of the other countries of the region in terms of chick imports. The EC has traditionally been Kuwait's largest supplier, but it can expect much stiffer competition from Jordan.

Kuwait also imports substantial amounts of frozen meat. Most is for domestic consumption, although large amounts are transshipped through the duty-free zone of Kuwait City to Iraq and Saudi Arabia. Frozen poultry is Kuwait's largest meat import. Chicken is popular in Kuwait, almost surpassing lamb and mutton consumption. It is sold widely in fast-food restaurants. During the seventies, with domestic production well under 10,000 tons, poultry imports grew rapidly because of rising affluence and a growing population.

Transshipped poultry meat has gone mainly into northeastern Saudi Arabia. In 1979, 15,000 tons of Kuwait's 54,000 tons of imports were transshipped. This shipping eased with the early 1981 opening of the Saudi port of Jubayl al Bahri, but a new transshipment trade with Iraq because of the war has nearly replaced the lost Saudi market.

Poultry meat imports will see slower growth than during the seventies, because of the loss of the large Saudi trade, an eventual end to the Iran-Iraq war, and large increases in domestic poultry production. Imports in 1982, at 50,000 tons, were less than in 1979. With the loss of much of the transit trade, this slight drop implies slightly higher domestic consumption. Imports by 1985 should increase only to 55,000 tons, because of increased domestic production. Levels in 1990 of 58,000 tons or less will depend on the success of local production operations. Poultry imports will come mainly from the EC and Brazil because of their low prices and high-quality packaging. Eastern Europe's share of this market is likely to decline, since exports from that area are stagnant.

Table 22—Kuwait: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	29.0	31.0	43.0	55.0	70.0	NA	na	na
Poultry imports	8,546.0	5,976.0	7,000.0	10,000.0	12,000.0	NA	na	na
Sheep imports	1,284.0	1,475.0	2,000.0	2,200.0	2,500.0	1.4	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	3.0 <sup>2</sup>	8.0	10.0	12.0	16.0	na	na	na
Imports	7.5	10.0	14.0	20.0	25.0	1.9	na	na
Consumption	10.5	18.0	24.0	32.0	41.0	na	13.3	19.2
Lamb and mutton—								
Production <sup>1</sup>	19.0	28.0	30.0	33.0	38.0	na	na	na
Imports	15.0	19.0	22.0	15.0	20.0	1.4	na	na
Consumption	34.0	47.0	52.0	48.0	58.0		27.3 <sup>3</sup>	27.2
Poultry—								
Production <sup>1</sup>	11.0	11.0	15.0	22.0	33.0	na	na	na
Imports	45.0	42.0	50.0	55.0	58.0	1.9	na	na
Consumption	56.0	53.0	65.0	77.0	91.0	na	29.5 <sup>3</sup>	42.7
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	6.8	10.0	13.0	15.0	18.0	NA	na	na
Consumption	6.8	10.0	13.0	15.0	18.0	na	7.4	8.5
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	1.8	3.0	4.0	4.0	4.0	NA	na	na
Consumption	1.8	3.0	4.0	4.0	4.0	na	2.2	1.9
Total meat	109.1	133.0	158.0	176.0	208.0	na	79.7	97.6
Dairy products:								
Butter—								
Production	—	—	—	—	—	na	na	na
Imports	3.4	4.8	5.5	6.0	7.0	1.3	na	na
Consumption	3.4	4.8	5.5	6.0	7.0	na	3.5	3.3
Cheese—								
Production	—	—	—	—	—	na	na	na
Imports	10.0	9.4	16.0	22.0	30.0	1.2	na	na
Consumption	10.0	9.4	16.0	22.0	30.0	na	6.9	14.1
Fresh milk—								
Production	17.0 <sup>2</sup>	17.0	20.0	26.0	36.0	na	na	na
Imports	.5	1.2	2.0	2.3	3.0	NA	na	na
Consumption	17.5	18.2	22.0	28.3	39.0	na	13.4	18.3
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	22.0	24.0	30.0	35.0	54.0	1.5	na	na
Consumption	22.0	24.0	30.0	35.0	54.0	na	17.7	25.4
Eggs—								
Production	3.0	3.0	4.0	7.0	10.0	na	na	na
Imports	13.0	12.0	16.0	18.0	20.0	NA	na	na
Consumption	16.0	15.0	20.0	25.0	30.0	na	11.1	14.1

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.<sup>2</sup>1979.<sup>3</sup>Excludes transshipments.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues; and Australian Meat and Live-Stock Corporation, *In Brief: A Situation Summary of the Live-Stock and Meat Industries*, April 1981. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



Imports of lamb and mutton, like those of poultry, have depended heavily on transit trade. Of the nearly 19,000 tons of lamb and mutton imported in 1980, almost 10,000 tons were transshipped. Loss of the Saudi market has dampened imports and only the trade with Iraq has prevented declines in imports. Kuwaitis prefer to slaughter their own sheep, so most growth in sheepmeat consumption will come through increases in live imports. Thus, although 1982 lamb and mutton imports were 22,000 tons, they should decline to 20,000 tons in 1990. New Zealand, Australia, India, and Turkey will be the major competitors.

Kuwait's beef imports should grow substantially, even with growth in live cattle imports. Urban incomes are high and restaurants abound, making beef an increasingly important meat. Beef is imported mainly by the Kuwait Supply Company, although many cooperative stores also import. The beef imported directly by the stores is usually of better quality, but is not subsidized and is thus more expensive. Imports increased to 14,000 tons in 1982, nearly double the 1978 level, and should reach 25,000 tons in 1990. Although the bulk of this meat will be provided by Australia, Argentina, and southern African countries, the United States should be able to sell high-quality beef.

Kuwait has imported sizable amounts of goat meat from India for South Asians working in the country. These imports should rise to 18,000 tons in 1990. Some growth in canned meat imports is also expected because of the Iraq-Iran war. Imports in 1982 reached 4,000 tons, a level that should be maintained over the decade by sales in the new convenience stores.

Kuwait imports some hatching eggs in addition to importing hatching chicks for its domestic poultry industry. These imports are only a small part of Kuwait's total egg imports, which are traditionally large. Eggs are popular and are becoming more widely accepted under Western influence. Most eggs are eaten for breakfast, either fried or scrambled. They are widely served in small restaurants and cafes catering to foreign workers without their own cooking facilities. Though demand will grow rapidly, imports are not expected to grow much, due to increases in domestic egg production. Imports, 16,000 tons in 1982, should grow to 20,000 tons in 1990. Eastern European countries, Spain, and Lebanon have been the largest suppliers, although Kuwait has purchased eggs from about 20 other countries, including the United States. Expanded U.S. exports to Kuwait should be possible.

Dairy imports have not been large. Cheese is not produced in Kuwait due to the extremely hot weather and limited dairy production. Cheese is not a traditional part of the diet. Kuwait has a free school lunch program which is the major consumer of cheese, taking fully a third of the total imports. This program has been introducing cheese into Kuwaiti diets, as has the influence of the many foreign workers in Kuwait.

Cheese is imported into Kuwait by private traders and is unsubsidized except for a small distribution subsidy. Its

price is, however, controlled by KSC which has the power to purchase cheese and sell it at a subsidized price if the market price becomes too high. The resulting low prices and growing popularity of cheese should cause imports to grow rapidly, especially in the latter half of the decade. Imports are projected to grow to 30,000 tons in 1990. The market will be mainly supplied by the EC, Eastern Europe, and Australia, although many other countries should have the opportunity to sell small amounts.

Kuwait's butter imports are quite small, although growing somewhat. Butter, not as important as in Iran and Algeria, is used mainly as a condiment in fancy restaurants. Oils, especially corn and peanut oil, are used extensively, and margarine often replaces butter on bread. Butter imports are expected to grow slowly; imports will be only 7,000 tons in 1990. The EC should remain the dominant supplier.

Kuwait has been a small importer of nonfresh milk, even though the country had almost no domestic production until recently. KSC imports the milk and sells it at nearly a 50-percent subsidy. Milk is being served in the school lunch program. Demand should be spurred with an increasing emphasis on health and good nutrition. Most of the increase in demand will have to be met by imports of nonfresh milk as climatic conditions will prevent large-scale dairy production. Imports of nonfresh milk should climb to 54,000 tons in 1990. Most will be supplied by the EC, now dominating the market.

## Iraq

Iraq's livestock product imports have been heavily affected by the war. Basra, the major port, has been closed, and el Fao, the only other port, was constantly bombed. As a result, most livestock products were shipped through Aqaba, Jordan's major port, or through Kuwait. Shipment has meant long desert hauls, requiring refrigerated trucks for the meats and dairy products. Slowness of this transport has dampened Iraq's imports and slowed its programs to increase meat consumption from the low 1980 level of 18 kg per capita (table 23). A tremendous boom in imports of livestock products should occur when the war ends and Iraq's ports reopen.

Iraq's imports of live animals are for breeding. Friesian and Jersey cows are imported for Iraq's small but growing dairy program, hatching chicks for its expanding poultry industry, and a small number of live sheep for breeding. Iraq hopes to expand its local production of livestock and livestock products, and is investing sizable amounts of money in this sector. Most dairy and poultry operations in the country are either state farms or cooperatives, both of which have access to investment funds and are supported with a substantial feed subsidy.

These factors should lead to continued growth in imports of live animals, especially when the war with Iran ends and ports are reopened. Dairy cow imports in 1982 were only about 5,000 head due to transport problems, but should increase to 10,000 head in 1990. The EC is likely to

Table 23—Iraq: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	2.3	4.0	5.0	7.0	10.0	NA	na	na
Poultry imports	1,560.0	22,000.0	23,000.0	30,000.0	35,000.0	NA	na	na
Sheep imports	.2	1.0	2.0	2.0	2.0	NA	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	49.0	51.0	52.0	58.0	80.0	na	na	na
Imports	8.3	9.0	80.0	30.0	50.0	NA	na	na
Consumption	57.3	60.0	132.0	88.0	130.0	na	4.50	6.2
Lamb and mutton—								
Production <sup>1</sup>	37.0	38.0	40.0	46.0	66.0	na	na	na
Imports	7.1	15.0	60.0	50.0	80.0	1.6	na	na
Consumption	44.1	53.0	100.0	96.0	146.0	na	3.90	6.9
Poultry—								
Production <sup>1</sup>	37.0	39.0	38.0	44.0	80.0	na	na	na
Imports	17.0	80.0	130.0	200.0	280.0	1.2	na	na
Consumption	54.0	119.0	168.0	244.0	360.0	na	8.80	17.0
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	.1	0.0	—	—	—	NA	na	na
Consumption	.1	0.0	—	—	—	na	—	—
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	3.1	10.0	20.0	30.0	50.0	NA	na	na
Consumption	3.1	10.0	20.0	30.0	50.0	na	.70	3.0
Total meat	158.6	242.0	335.0	458.0	686.0	na	18.00	32.5
Dairy products:								
Butter—								
Production	7.0	7.0	9.0	13.0	19.0	na	na	na
Imports	3.8	6.0	11.0	10.0	12.0	1.1	na	na
Consumption	10.8	13.0	20.0	23.0	31.0	na	.96	1.5
Cheese—								
Production	26.0	27.0	27.0	32.0	40.0	na	na	na
Imports	7.1	18.0	25.0	30.0	40.0	1.1	na	na
Consumption	33.1	45.0	52.0	62.0	80.0	na	3.30	3.8
Fresh milk—								
Production	252.0	262.0	300.0	500.0	700.0	na	na	na
Imports	0.0	0.0	0.0	0.0	0.0	NA	na	na
Consumption	252.0	262.0	300.0	500.0	700.0	na	19.40	33.1
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	17.0	60.0	91.0	100.0	160.0	1.6	na	na
Consumption	17.0	60.0	91.0	100.0	160.0	na	4.50	7.6
Eggs—								
Production	19.0	20.0	26.0	30.0	35.0	na	na	na
Imports	1.2	20.0	60.0	100.0	160.0	1.6	na	na
Consumption	20.2	40.0	86.0	130.0	195.0	na	3.00	9.2

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



continue as the largest supplier of dairy cows, although there are opportunities for the United States to supply stock. Sheep imported for breeding should average about 2,000 head per year over the decade; they will be largely supplied by New Zealand. Growth in hatching chick imports will be substantial, since the greatest emphasis is being placed on poultry production. Imports should reach 35 million head in 1990. Such imports will be cut, however, if hatcheries become widespread. Most chicks come from the EC and Eastern Europe, but the United States has potential to enter this market.

Iraq was only a moderate meat importer throughout most of the seventies. The Government program of improving diets, in large part by increasing meat consumption, has changed this. Realizing that increased domestic production was a long-term solution, the Government began importing meat to provide immediate improvement. Poultry meat imports increased sharply in the late seventies and early eighties as did imports of sheepmeat and beef.

Most Iraqi meat imports are used to supply urban areas. Meat is imported and distributed by the Government without profit, giving an implied subsidy. Continuation of this subsidy and extension of supplies to rural areas will increase the need for imported meat, even if domestic meat production booms. Poultry meat will remain the largest of the meat imports and will be the major meat distributed in the rural areas. Priority has been given to importing poultry meat; even with transport problems, imports reached 130,000 tons in 1982. Even more rapid growth can be expected when the war ends, with imports amounting to 280,000 tons in 1990. Domestic production is expected to provide another 80,000 tons by 1990. These import levels would make Iraq the area's second largest poultry meat importer. The United States has a good chance of supplying much of the imports, along with Brazil, the EC, and Eastern Europe.

Lamb and mutton, very popular but not always readily available, will be second only to poultry meat in import volume. Imports in 1982 easily reached 35,000 tons with only transport problems inhibiting growth. Imports of 80,000 tons by 1990 will be needed to supplement domestic sheep production, which is growing more slowly than either poultry or beef production. Sheepmeat imports will be distributed mainly to urban areas. New Zealand will be the dominant supplier, although Australia is very interested.

Iraq's beef imports are also expected to grow as supplies will be needed to supplement the beef from the new cattle feeding operations around major cities; many new hotels are opening. Imports reached 80,000 tons in 1982. Australia is likely to continue as Iraq's major supplier of beef, although competition may be offered by Brazil and southern African countries, such as Botswana.

Lamb and mutton imports reached 60,000 tons in 1982. Imports of other fresh and frozen meats, mainly pork, will be extremely limited, probably far less than 1,000 tons annually. Most such imports will go to hotels. With meat in short supply in rural areas, and a chronic lack of refrigeration, much of the Government's planned increase in rural meat supplies will come via canned meat. Canned meat is also consumed by the Iraqi army. Because of the war with Iran and the resulting shipping difficulties for fresh meat, Iraq's 1982 imports of canned meat rose to 20,000 tons, more than double the 1980 level. Expected distribution of canned meat to rural areas should cause continued growth, with imports reaching 50,000 tons in 1990. The EC, Brazil, and Australia are likely to continue to be the major suppliers. There are, however, excellent opportunities for the United States.

Iraq was one of the world's largest importers of eggs in the midseventies. Imports reached 34,000 tons in 1975, mainly for consumption. Then, egg imports fell in 1978 to 1,200 tons. This fall was not caused by a rapid increase in production, which remained at slightly under 20,000 tons, but rather by an import policy change. Imports have again soared, reaching 40,000 tons in 1981. Of this, 25,000 tons came from the United States, making Iraq the largest market for U.S. eggs. Eggs are highly subsidized in Iraq, and at least a third are consumed by the army or in free school lunches.

Demand for eggs will grow much faster than growth in domestic production as eggs become more popular. Production is expected to increase to 35,000 tons in 1990. Egg imports should easily reach 160,000 tons by 1990. The United States has an excellent opportunity to supply many of these eggs, although competition from the EC and Eastern European countries will be great.

Dairy imports are not large compared with the other study countries. There is little domestic production relative to population and consumption is low. Butter is Iraq's smallest dairy product import and growth is likely to be small. Iraq's imports are far below those of Iran, Algeria, and Saudi Arabia since the population finds cooking oil a ready substitute for butter. Imports of butter in 1982 were 11,000 tons, with slow growth to 12,000 tons in 1990 expected. New Zealand will probably continue to supply the bulk of this trade.

Cheese is produced and imported in substantially larger quantities. Iraq was a moderate cheese importer during the seventies, importing about the same amount as Algeria but far less than Iran or Saudi Arabia. Gouda and Cheddar are the most popular in Iraq, although consumption is limited to urban areas. Much of the imported cheese is consumed by the army or school children, which in the long run should increase demand by changing preferences.

Current shortages of fresh milk imply that increased dairy production will not mean much increased cheese production. Increased demand will be met by imports of cheese. Imports of 25,000 tons needed in 1982 should grow to 40,000 tons in 1990. If widespread distribution of cheese

to rural areas is undertaken, import requirements could be far greater. New Zealand and the EC are the most probable suppliers.

Iraq's largest dairy import is nonfresh milk. Although smaller than those of Algeria and Saudi Arabia, Iraq's nonfresh milk imports more than tripled between 1978 and 1980. Milk is not universally popular, but it has been introduced to the school lunch program and its consumption is being encouraged. Domestic production of fresh milk is small, and a large amount of nonfresh milk is reconstituted and mixed with fresh milk. This process should continue for a long time. Even large growth in domestic milk output will not affect nonfresh imports.

Demand growth should cause a very substantial increase in nonfresh milk imports. The new emphasis on improved diet and the introduction of milk to school children should increase the acceptance of milk in the diet. Lack of refrigerated storage in rural areas will make necessary the distribution of nonfresh milk to these areas. Imports of nonfresh milk should reach 160,000 tons in 1990. The EC is likely to remain the major force in the market. There are, however, opportunities for others, especially New Zealand and the United States.

## Iran

Iranian imports of livestock products have been greatly affected by the Islamic revolution and the war with Iraq. Most livestock product imports fell substantially in 1979 as the Iranian Government instituted a policy of food import control. The Government felt that almost all demand for food could be met by local production, and imports decreased. Later, however, with severe shortages of both meats and dairy products, import restrictions were lifted and imports rose to pre-revolution levels. However, the war with Iraq and the subsequent shift of ships from Khorramshah to Bandar Khomeini and Bandar Abbas have limited imports, since the latter ports have much smaller capacities than Khorramshah.

Iran's imports of live cattle and poultry have been for breeding rather than slaughter. Before the Islamic revolution, Iran placed emphasis on local dairy and poultry production, using modern techniques. Almost all imported cattle were used in the dairy industry, and came from the United States and Israel. The millions of live chicks imported from the EC, Eastern Europe, and Israel were used as broiler stock in the country's numerous poultry plants.

At the beginning of the Islamic revolution, both dairy and poultry production suffered serious setbacks as much of the management fled the country. Inputs, especially feed, were limited. As unrest began to grow over food shortages, the Government emphasized restoring the operations of these facilities. This emphasis is expected to continue; Iran should once again import substantial numbers of dairy stock to improve the quality of domestic herds. Imports are expected to grow to 15,000 head in 1990 (table 24). Most will be sent by the EC and Eastern Europe. Baby

chick imports should also increase, reaching 25 million in 1985. Imports will probably not increase by the end of the decade and may decrease as the Iranian industry becomes more self-sufficient. East Europe will be the dominant supplier.

Iran has a domestic herd of over 30 million head of sheep and it is the Middle East's second largest importer of live sheep, slightly behind Saudi Arabia. Approximately 12 million head are slaughtered annually to produce nearly 250,000 tons of lamb and mutton, according to FAO estimates. Most of the meat from local animals is consumed in the rural areas, while Iran has imported substantial numbers of live sheep for the cities since the early seventies. Imports of live sheep peaked at 3.1 million head in 1977. Because of the import restrictions and general economic uncertainty of 1979, imports fell to fewer than 2 million head in 1979. Most of this decline came from the Australian share, which fell from 2.6 million head in 1977 to fewer than 1.5 million head in 1980.

Since sheepmeat is the major meat in the diet, the Iranian Government has become worried about recent severe shortages of mutton in the major urban areas. Live sheep imports are preferred to frozen lamb and mutton imports because of limited refrigeration and Islamic slaughter rites. Imported live sheep are normally fed for several months to take advantage of a feed subsidy offered by the Iranian Meat Organization. The major constraint to expanding live sheep imports is lack of adequate transportation. Almost all live sheep are unloaded at Bandar Abbas, but delays may be as much as 30 days and many sheep have died. Also, Bandar Abbas is poorly connected to the populated areas of central Iran. Imports of live sheep are likely to grow to 4.4 million in 1990 as Iran's other ports reopen and the transportation network improves. Australia will remain the dominant supplier.

Though Iranians prefer to import live animals for slaughter, Iran has long been a large importer of meat, especially sheepmeat. The year of Iran's largest live sheep imports, 1977, was also the peak for lamb and mutton imports. Demand for meat is growing quickly. Lamb and mutton are Iran's major meat imports, supplied by New Zealand, Australia, and Eastern Europe. Although Iran's lamb and mutton imports fell substantially in 1979, Iran has remained the area's largest importer. Iran's beef imports are also substantial, although beef is consumed only among the Iranian upper classes. Until the late seventies, when surpassed by Saudi Arabia, Iran was the area's major beef importer. Iran also imports large amounts of frozen poultry to supplement domestic broiler production.

Iran's meat imports are likely to continue to grow. Per capita meat consumption in the country is very low, only 20 kg annually, but shortages are common. Imports of meat in 1982 were especially high because of the difficulties with importing live sheep through Bandar Abbas. Lamb and mutton imports in 1982 reached 130,000 tons, almost entirely from New Zealand, while beef imports increased to 50,000 tons and poultry imports rose to 40,000



Table 24—Iran: Livestock product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 head			Coefficient			Kg/yr	
Live animals:								
Cattle imports	15.0	5.2	10.0	12.0	15.0	NA	na	na
Poultry imports	11,194.0	15,000.0	20,000.0	25,000.0	25,000.0	NA	na	na
Sheep imports	3,056.0	2,000.0	2,000.0	3,800.0	4,400.0	2.2	na	na
	1,000 tons							
Meat:								
Beef and veal—								
Production <sup>1</sup>	160.0	171.0	180.0	195.0	210.0	na	na	na
Imports	28.0	30.0	50.0	75.0	120.0	1.8	na	na
Consumption	188.0	201.0	230.0	270.0	330.0	na	5.4	6.5
Lamb and mutton—								
Production <sup>1</sup>	230.0	232.0	240.0	258.0	270.0	na	na	na
Imports	65.0	105.0	130.0	150.0	225.0	1.6	na	na
Consumption	295.0	337.0	370.0	408.0	495.0	na	9.0	9.8
Poultry—								
Production <sup>1</sup>	208.0	211.0	185.0	250.0	310.0	na	na	na
Imports	19.0	7.0	40.0	50.0	80.0	2.4	na	na
Consumption	227.0	218.0	225.0	300.0	390.0	na	5.8	7.7
Other fresh and frozen—								
Production	—	—	—	—	—	na	na	na
Imports	.6	0.0	.2	.2	.2	NA	na	na
Consumption	.6	—	.2	.2	.2	na	—	—
Prepared and preserved—								
Production	—	—	—	—	—	na	na	na
Imports	1.1	.5	1.0	3.0	8.0	NA	na	na
Consumption	1.1	.5	1.0	3.0	8.0	na	—	.2
Total meat	711.7	756.5	826.2	981.2	1,223.2	na	20.2	24.1
Dairy products:								
Butter—								
Production	66.0	67.0	70.0	73.0	76.0	na	na	na
Imports	23.0	55.0	85.0	120.0	150.0	1.7	na	na
Consumption	89.0	122.0	155.0	193.0	226.0	na	3.3	4.5
Cheese—								
Production	98.0	99.0	105.0	110.0	115.0	na	na	na
Imports	40.0	57.0	85.0	120.0	150.0	1.7	na	na
Consumption	138.0	156.0	190.0	230.0	265.0	na	4.2	5.2
Fresh milk—								
Production	1,580.0	1,567.0	1,600.0	1,750.0	2,200.0	na	na	na
Imports	.7	.5	1.0	1.2	1.5	NA	na	na
Consumption	1,580.7	1,567.5	1,601.0	1,751.2	2,201.5	na	41.9	43.4
Nonfresh milk—								
Production	—	—	—	—	—	na	na	na
Imports	15.0	19.0	15.0	30.0	45.0	1.7	na	na
Consumption	15.0	19.0	15.0	30.0	45.0	na	.5	.9
Eggs—								
Production	244.0	170.0	185.0	240.0	295.0	na	na	na
Imports	7.9	10.0	15.0	30.0	45.0	NA	na	na
Consumption	251.9	180.0	200.0	270.0	340.0	na	4.8	6.7

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Production includes locally slaughtered imported live animals.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



tons. Eastern Europe supplies both beef and poultry, while other beef is shipped from Turkey and southern African countries. Brazil ships large amounts of frozen poultry. Lamb and mutton should grow to between 200,000 and 250,000 tons by 1990 depending on economic conditions. Beef imports could easily grow to 120,000 tons, while poultry imports could reach 80,000 tons.

Imports of other fresh and frozen meats such as pork, camel, horse, and rabbit have been insignificant, being imported mainly for foreign workers. Imports will remain small, averaging no more than 200 tons per year. There is, however, a growing market for tinned meat, especially corned beef, which is eaten in southern Iran where fresh meat is unavailable. Supplied mainly by the EC, these imports should grow to 8,000 tons in 1990.

Eggs are an important part of the Iranian diet. Most eggs (185,000 tons annually) are produced domestically. But, in the midseventies, Iran was also a substantial importer of eggs, buying as much as 27,000 tons in 1977. While some of these eggs were for hatching, most were for consumption. Recently, however, imports have all been hatching eggs, and this is likely to continue until at least the middle of the eighties. Egg imports should increase to 30,000 tons in 1985 as imports of eating eggs resume. Imports should rise to 45,000 by 1990 to help meet excess demand.

Cheese is another very important import. Feta cheese is favored, with the EC being by far the dominant supplier. Iran is one of the world's largest cheese importers, with only Saudi Arabia coming close to matching its imports among the study countries. Unlike most other products, cheese imports did not drop with the Islamic revolution. Approximately a third of total cheese distribution is subsidized in Iran, which helps keep prices low. Since these subsidies are likely to continue, and since local production

will increase slowly if at all, Iran's cheese imports should rise substantially. Imports of cheese grew to 85,000 tons by 1982, 28,000 more than the 1980 level. Imports should reach 150,000 tons in 1990. With its export subsidies, the EC will remain the dominant supplier, although the Eastern European countries and New Zealand will be increasingly active in the market.

Iran is also a large butter importer. Like cheese, butter imports did not decline with the 1979 Islamic revolution. They even doubled that year, making Iran the world's largest butter importer outside the EC. Butter, extensively used over rice, is also spread on bread and used in cooking though it is more expensive than cooking oil. Nearly half of the butter consumed in Iran is imported. In 1979, the EC became the largest supplier, at 39,000 tons, although previous major suppliers included Sweden, Finland, Eastern Europe, and New Zealand. Butter output will grow slowly over the next decade, since most milk produced in the modern dairies is consumed fresh. Butter imports should grow rapidly, reaching 150,000 tons in 1990. If the EC continues its heavy subsidization of butter exports, it will remain Iran's largest supplier. There are many opportunities for other exporters with the market expanding so rapidly.

Iran's imports of nonfresh milk are only slightly above Qatar's, the area's smallest importer. Milk is considered a drink for children and the sick and is thus not very popular. Most imports are mixed with locally produced fresh milk, as nonfresh milk served alone is despised. If milk consumption becomes more fully accepted and encouraged for nutritional reasons, import growth could be substantial, since overall supplies would need to grow faster than domestic production. Such an increase in demand will probably not occur, however. Imports will probably not be more than 45,000 tons in 1990. The EC and New Zealand will likely continue to be Iran's largest suppliers.



## Chapter 6—Projections: Oilseeds

Only a few countries (Libya, Iraq, Iran) have both domestic oilseed production and local crushing capacity. Two others (Algeria and Kuwait) have local crushing capacity but negligible domestic production. The others have neither significant production nor crushing capacity. Despite increases in local crushing of mainly imported seeds for oil and meal in Algeria, Saudi Arabia, UAE, Kuwait, Iraq, and Iran, no country will crush even 20 percent of its oil in 1990, and only Iran will crush as much as 33 percent of its meal. Rising demand will therefore significantly expand import demand for vegetable oil (from 1 million tons in 1980 to 2.1 million tons in 1990) and meal (from 433,000 tons to 3.1 million tons) (table 25).

Population growth and increases in per capita consumption resulting from income growth and subsidy policies will account for increases in vegetable oil imports, with population being the major source of growth in Libya and the UAE, where per capita consumption is already high. Cooking oil is heavily subsidized in Algeria (but with shortages), Libya, Saudi Arabia, Qatar, Kuwait, and Iraq. Commitment to programs of livestock expansion (primarily poultry and dairy), and the policies which support such expansion and crushing operations, will fuel increased imports of oilseeds and meal.

The region imports a variety of oilseeds, but individual countries rely on one or two (with the exception of Saudi Arabia). Rapeseed predominates in Algeria, increasingly mixed with sunflower oil, while olive and sunflower oils are important in Libya. Palm oil is Saudi Arabia's major oil, but the country is the world's largest importer of corn oil. Corn oil is expected to predominate by 1990. A range of other oils—blended, soy, olive, cottonseed, and sunflower—are also imported. Corn oil is the major oil in the UAE and Qatar, and is second to palm oil in Kuwait. Palm oil also predominates in Iraq, while soybean and cottonseed oil are most important in Iran.

The principal meals are soy in Algeria, cottonseed in Libya, soybean and peanut in Saudi Arabia and Kuwait, soybean in Iraq, and cottonseed and soybean in Iran.

The United States has been an important supplier of sunflower oil (Algeria), soybean oil (Iran), and oilseed meal (Saudi Arabia and Kuwait). The EC provides some competition in oilseed meal, as does Brazil in meal and soybeans. Corn oil is supplied by Singapore, with palm oil coming from Southeast Asia. Spain supplies sunflower in competition with the United States.

Table 25—Eight study countries: Oilseed product production, imports, and consumption

Commodity	Production			Imports			Consumption		
	Actual	Projected		Actual	Projected		Actual	Projected	
	1980	1985	1990	1980	1985	1990	1980	1985	1990
<i>1,000 tons</i>									
<b>Oilseeds:</b>									
Cottonseed	131	215	290	—	2	3	131	217	293
Peanuts	11	24	39	16	83	122	27	107	161
Rapeseed	—	—	—	54	105	120	54	105	120
Soybeans	51	140	220	32	196	651	83	336	871
<b>Cooking oils:<sup>1</sup></b>									
Blended	—	—	—	43	51	40	43	51	40
Corn	—	—	—	73	172	214	73	172	214
Coconut	—	—	—	5	12	17	5	12	17
Olive	36	40	47	68	90	120	104	130	167
Palm	—	—	—	237	295	326	237	295	326
Peanut	1	12	19	1	15	26	2	27	45
Rapeseed	22	42	48	54	100	25	76	142	73
Soybean	17	67	174	353	602	787	370	669	961
Sunflower	2	14	22	147	233	317	149	247	339
<b>Vegetable oil meals</b>	<b>204</b>	<b>532</b>	<b>1,045</b>	<b>433</b>	<b>1,510</b>	<b>3,140</b>	<b>637</b>	<b>2,042</b>	<b>4,185</b>

<sup>1</sup>Includes oils produced from imported seeds.

Source: U.S. Dept. Agr., Econ. Res. Serv.



The United States has market development potential in sunflower oil (Libya and Saudi Arabia), soybean oil (Algeria and Iran—if political changes occur), oilseed meal (Algeria, Saudi Arabia, and Iraq), corn oil (Saudi Arabia), soybeans (Iraq), and peanut and cottonseed oil (Saudi Arabia).

## Algeria

Algeria's imports of oilseed products, especially cooking oil, have risen rapidly since the midseventies. Per capita consumption of cooking oil increased between 1975 and 1980, from 9 kg to 9.8 kg (table 26). Population also increased substantially, further increasing demand. Growing emphasis on livestock feeding has encouraged imports of oilseed meal as well; these have more than quadrupled between 1975 and 1980. Imports of some oilseeds have been less dynamic, with rapeseed imports growing little in the last decade. Algeria's overall oilseed imports, however, grew significantly. Continued population growth together with increased emphasis on livestock will further increase demand. As with grains and livestock products, Algeria shows great potential for becoming a significant importer of oilseed products.

Algeria has no significant oilseed production except for olives. Domestic olive oil production meets only 10 percent of demand, however. The French introduced rapeseed oil to the country as an alternative; this has now become the country's major source of cooking oil. Rapeseed is not grown in Algeria; but, part of the rapeseed oil consumed is produced there, using imported rapeseed in crushing plants built by the French before the revolution. Imports of rapeseed for crushing have been erratic over the last two decades, in some years reaching 100,000 tons and in others dropping to 50,000 tons. Rapeseed produces about 40 percent oil and 58 percent meal. While all of the oil from the crush is consumed in Algeria, over half of the meal is exported rather than used as feed.

The future of rapeseed imports depends on a number of factors. Algeria's crushing facilities are designed only for rapeseed. Importing the seed exclusively for its oil, then exporting the meal, is very inefficient. But, the toxicity of rapeseed meal has discouraged its use as a domestic feed. On the other hand, Algeria is desperately short of meal for its feed rations and this is likely to be the determining factor in imports. Rapeseed meal does not seem to be the answer to Algeria's feed requirements, however, because of its toxicity, low protein content, and the low meal content of rapeseed (58 percent, compared to 80 percent for soybeans). No significant expansion of rapeseed crushing facilities is foreseen and rapeseed imports by the end of the decade should not amount to much more than 120,000 tons, coming from Canada and both East and West Europe.

The Algerians have expressed interest in crushing soybeans for both oil and meal. While the national marketing agency, ONACO, would be responsible for importing the beans, the processing would be handled by SOGEDIA. Imports of soybeans were about 2,000 tons in 1982. But, by

1985, they should grow to 30,000 tons and reach 100,000 tons by 1990 as most emphasis in Algeria will be on soybean crushing rather than on rapeseed. Brazil has been interested in helping the Algerians to develop their industry and is likely to take a major market share, although there is also potential for the United States.

Meal provided by soybean crushing will be inadequate to meet the growing demand, however, and imports of vegetable oil meal are expected to rise substantially above their 1980 levels of 57,000 tons. Meal is imported by ONACO, but it is procured by the national livestock company, ONAB, to be mixed into feed rather than being sold to SOGEDIA. With the rapid expansion in feeding, vegetable oil meal imports of 110,000 tons were needed in 1982. The Algerian 5-year plan calls for a doubling of meat production by 1985, and the Government is providing the resources to reach that objective although it is not likely to do so. Imports in 1985 are thus projected to grow to 250,000 tons and reach 500,000 tons in 1990. With the proper market development activities and competitive prices, the United States could be a large supplier of meal, although there will be stiff competition from Brazil, which is showing growing interest in the Algerian market. The EC is the largest supplier of meal.

Imports of oilseeds and meals are dwarfed by vegetable oil imports. Algeria was the world's seventh largest importer of vegetable oil in 1980. Most cooking oil consumed in Algeria is imported, with less than 10 percent coming from local production or the crushing of imported seeds. Although crushing of soybeans is expected to increase dramatically, Algeria's rapidly growing population will more than offset the oil supplied. Cooking oil consumption of 9.8 kg per capita is quite low, less than half of U.S. consumption. Cooking oil in Algeria is also heavily subsidized, selling for about 25 cents per liter. Low consumption levels have resulted from persistent shortages, which the Government has recently begun to alleviate with imports. These policies are expected to continue, encouraging substantial imports.

Rapeseed oil is the major oil consumed. Some is obtained from local crushing of imported rapeseed, but most is imported as unrefined oil. Algeria is frequently the world's largest importer of rapeseed oil. It is imported by ONACO in bulk and refined and packaged by SOGEDIA, which mixes much of it with sunflower oil. Algeria's rapeseed oil imports topped 100,000 tons in 1979, but fell back in 1980 and 1981. Canada, through very aggressive marketing, was able to forestall this decline by signing a 3-year agreement to deliver 100,000 tons of rapeseed oil each year between 1982 and 1985, at a price 1 cent per pound below the Chicago soybean oil price. As a result, Algeria's 1982 and 1985 imports will be about 100,000 tons, although rapeseed oil imports are expected to be replaced by soybean oil imports by the end of the decade. Thus, rapeseed oil imports should decline to 25,000 tons in 1990. With its new agreement, Canada has gained control of the market over the EC and Eastern Europe. It will likely maintain that control.

Table 26—Algeria: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption¹	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Flaxseed—								
Production	—	—	—	—	—	na	na	na
Imports	0.1	0.0	0.2	0.2	0.2	NA	na	na
Peanuts—								
Production	—	—	—	—	—	na	na	na
Imports	12.8	10.0	20.0	30.0	50.0	NA	0.5	1.8
Rapeseed—								
Production	—	—	—	—	—	na	na	na
Imports	104.6	54.1	100.0	105.0	120.0	1.0	na	na
Safflower—								
Production	—	—	—	—	—	na	na	na
Imports	.2	0.0	.2	.2	.2	NA	na	na
Sesame seed—								
Production	—	—	—	—	—	na	na	na
Imports	.6	0.0	1.0	5.0	5.0	NA	—	.2
Soybeans—								
Production	—	—	—	—	—	na	na	na
Imports	0.0	.5	2.0	30.0	100.0	NA	na	na
Sunflowerseed—								
Production	1.0	1.0	2.0	3.0	10.0	na	na	na
Imports	1.1	0.0	2.0	2.0	2.0	NA	na	na
Cooking oils:								
Coconut—								
Imports	3.3	3.0	.2	.2	.2	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	2.5	2.4	3.0	3.0	3.0	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	—	—	—	—	—	na	na	na
Domestic crush	22.0	19.0	18.0	20.0	25.0	na	na	na
Palm—								
Imports	1.6	5.0	5.0	5.0	5.0	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Rapeseed—								
Imports	79.8	54.0	100.0	100.0	25.0	1.5	na	na
Domestic crush	42.0	22.0	40.0	42.0	48.0	na	na	na
Soybean—								
Imports	2.7	3.2	10.0	25.0	100.0	NA	na	na
Domestic crush	—	—	.4	6.0	20.0	na	na	na
Sunflower—								
Imports	61.7	85.0	100.0	130.0	175.0	1.4	na	na
Domestic crush	—	—	1.0	1.0	3.0	na	na	na
Total consumption²	215.6	193.6	280.6	332.2	404.2	na	9.8	14.6
Vegetable oil meals:								
Imports	54.4	57.0	110.0	250.0	500.0	1.7	na	na
Domestic crush	63.0	32.0	62.0	87.0	152.0	na	na	na
Consumption	117.4	89.0	172.0	337.0	652.0	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production*, 1972-81, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



Algeria's sunflower seed oil imports have also been rising very rapidly. Most of the oil is mixed with rapeseed oil, with the proportion of sunflower oil rising. Some sunflower oil is being sold unmixed, preserving its high qualities. Algeria's imports of 85,000 tons in 1980 were over five times the 1975 imports. Algeria has become one of the world's top importers after France and Japan, as well as one of the largest markets for U.S. sunflower oil. Continued increases in sunflower oil imports are expected as its popularity increases, displacing even rapeseed oil. Imports of 100,000 tons in 1982 are expected to grow to 175,000 tons in 1990. With the Soviet Union dropping out of the export market, the United States and Argentina will be the main contenders for this market.

Soybean oil is not presently a large import by Algeria, but a significant market for it could develop. Soybean oil is very similar to rapeseed oil, but it is also normally less expensive (without Canadian price interventions). ONACO has expressed interest in importing soybean oil, especially since the 1981 problems with rapeseed oil in Spain. Imports of rapeseed oil are fixed by the agreement with Canada until 1985, but small imports of soybean oil can be expected until the mideighties when they should boom. Thus, imports of about 10,000 tons in 1982 are expected to grow to 100,000 tons in 1990. Shares will depend on the marketing efforts of Brazil, the United States, and Spain.

Algeria's boom market for cooking oils is expected to continue. Even with the large increases in imports and oil available from domestic crushing, however, per capita consumption in 1990 will only be slightly above 15 kg, a relatively low level. Oilseed meal imports are poised to take off, and by 1990 Algeria should be a large importer. Rapeseed and soybean imports will grow but will remain small by world standards.

## Libya

Per capita consumption of vegetable oil in Libya rose substantially between 1975 and 1980, from 17 kg to 27 kg, slightly higher than the U.S. level (table 27). Production of vegetable oil in Libya is limited to olive oil, and this fell slightly from 19,000 to 16,000 tons from 1975 to 1980. Thus, most of the increase in consumption was supplied by imports. Imports, accounting for 54 percent of total consumption in 1975, supplied 79 percent in 1980. Although the Government has recently allocated more funds to rejuvenate the olive orchards, these are not expected to do much more than halt further deterioration. Vegetable oil imports in 1990 should supply 86 percent of total consumption.

Olive oil is Libya's major vegetable oil import. Libya is the world's second largest net importer of olive oil after Italy. Olive oil is the main cooking oil in Libya, both from traditional availability and Italian influence. Cooking oil prices are heavily subsidized in Libya, and thus olive oil is affordable enough for general cooking. This preference for olive oil is expected to continue. Although per capita olive oil consumption should drop somewhat as other cooking

oils become more widely used, Libya's growing population will keep imports rising. Imports have increased substantially, reaching nearly 55,000 tons in 1982 from 37,000 in 1978. They should reach 70,000 tons in 1990. Spain, dominating world olive oil trade, has also completely dominated the Libyan olive oil market. Tunisia is a large potential supplier, but political differences have kept Tunisian imports to a minimum.

Sunflower oil has recently been increasing in popularity in Libya, and its expected consumption growth will be the major factor in the decline of per capita olive oil consumption. Sunflower oil has only been imported into Libya since the midseventies, with 1975 imports of only 1,500 tons. By 1982, however, this amount rose to 12,000 tons. This rapid growth will continue, with expected imports of 40,000 tons in 1990. Spain is currently the largest supplier of sunflower oil but, unless its production grows substantially, it will not be able to meet Libya's growing needs. The United States and Argentina are not suppliers, but they should have opportunities in this market.

Libya also imports many other cooking oils, but in very small amounts. Soybean oil, palm oil, coconut oil, and corn oil are all imported, mainly in consumer-ready packages from West Europe. Although some growth in imports of these oils is expected, they will not become as important as olive or sunflower oil. Imports of these oils are projected to 9,200 tons by 1990, up substantially from the 5,100 tons imported in 1982, but still relatively insignificant. These imports, destined for Government supermarkets, will be supplied by West Europe.

Meal will be Libya's other large oilseed product import. Libya has been second only to Iran as the Middle East's largest meal importer, with imports of nearly 100,000 tons annually since the late seventies. Libya's ambitious poultry and dairy feeding projects have been undertaken using mixed rations to a very large extent. Libya has been importing grain and meal for mixing. Most of Libya's meal is imported from Greece and is mainly cottonseed meal, although other types are imported from other West Europe countries.

Half of the cost of imported meal is subsidized by the Government. Continued and possibly increased emphasis on livestock production will result in further growth in imports. Imports in 1982 reached an estimated 100,000 tons. By 1985, 250,000 tons will be required to meet livestock production goals. Although the EC is the largest supplier of meal, it is not a large exporter by world standards; Libya will have to turn to the United States or Brazil for its requirements.

## Saudi Arabia

Saudi Arabia is the world's tenth largest importer of cooking oils, and one of the Middle East's largest importers of oilseed meals. Oilseed imports are also growing. Saudi Arabia has almost no domestic oilseed production. Its rapidly growing population and rising incomes as well as consumer subsidies have worked to increase the demand



for cooking oils. Increases in meal and oilseed imports have resulted from the increase in meat demand, because emphasis has been placed on domestic meat production which requires imported feed. Saudi Arabia's imports of oilseeds and products will grow for the same reason.

Saudi expenditures on cooking oil imports were nearly \$140 million in 1980, triple the expenditures on wheat. This is less than either Iranian or Algerian imports, but still a very large amount by world standards. Unlike these other countries, however, Saudi Arabia imports a variety of oils rather than specializing in one type. This is partially a result of market differentiation. Many of the lower income workers purchase the less expensive palm and soybean oils, while more wealthy Saudis purchase higher priced

corn, peanut, olive, or blended oils in supermarkets. This division has spurred consumption increases from only 6 kg per capita in 1975 to 19 kg in 1980.

Growth in palm oil imports has been remarkable: from only about 2,000 tons in the midseventies to over 70,000 tons by 1980 (table 28). Palm oil is imported refined from the Southeast Asian exporting countries; it has been relatively cheap. Now, however, because the workforce in Saudi Arabia is becoming more skilled and consequently more affluent, consumption may begin to shift toward higher value cooking oils. Palm oil imports in 1982 fell to 60,000 tons, and in 1990 they will have increased only to 80,000 tons, supplied almost totally by Singapore, Indonesia, and Malaysia.

Table 27—Libya: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Oilseeds:								
Peanuts—								
Production	7.00	7.00	9.00	14.00	19.00	na	na	na
Imports	.10	.50	.10	.20	.30	NA	2.5	4.0
Cooking oils:								
Coconut—								
Imports	.50	.20	.90	2.00	3.00	1.2	na	na
Domestic crush	—	—	—	—	—	na	na	na
Corn—								
Imports	0.00	1.40	1.70	2.00	2.00	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	.02	.01	.05	.05	.05	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	36.70	54.50	55.00	60.00	70.00	1.8	na	na
Domestic crush	16.00	16.00	16.00	18.00	20.00	na	na	na
Palm—								
Imports	.90	1.00	2.30	3.00	4.00	1.2	na	na
Domestic crush	—	—	—	—	—	na	na	na
Soybean—								
Imports	.09	.20	.20	.20	.20	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Sunflower—								
Imports	7.60	9.50	12.00	20.00	40.00	1.5	na	na
Domestic crush	—	—	—	—	—	na	na	na
Total consumption <sup>2</sup>	61.80	82.80	88.10	105.20	139.20	na	27.4	28.5
Vegetable oil meals:								
Imports	79.10	81.10	100.00	250.00	500.00	1.7	na	na
Domestic crush	—	—	—	—	—	na	na	na
Consumption	79.10	81.10	100.00	250.00	500.00	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.

<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Table 28—Saudi Arabia: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption¹	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Cottonseed—								
Production	—	—	—	—	—	na	na	na
Imports	1.4	0.2	1.7	2.4	3.0	NA	na	na
Peanuts—								
Production	—	—	—	—	—	na	na	na
Imports	3.6	.9	9.0	20.0	30.0	NA	—	1.2
Sesame seed—								
Production	1.0	1.0	2.0	2.0	5.0	na	na	na
Imports	5.3	6.7	9.0	11.0	12.0	NA	0.7	1.2
Soybeans—								
Production	—	—	—	—	—	na	na	na
Imports	3.5	10.1	20.0	50.0	200.0	NA	na	na
Sunflowerseed—								
Production	—	—	—	—	—	na	na	na
Imports	0.0	0.0	.1	.1	.1	NA	na	na
Cooking oils:								
Blended—								
Production	—	—	—	—	—	na	na	na
Imports	35.0	43.0	54.0	51.0	40.0	1.6	na	na
Coconut—								
Imports	.8	.2	.7	1.0	1.0	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Corn—								
Imports	26.3	47.0	73.0	112.0	140.0	1.6	na	na
Domestic crush	—	—	—	—	—	na	na	na
Cottonseed—								
Imports	.5	2.5	5.0	9.0	12.0	1.2	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	2.5	2.1	3.0	3.3	5.0	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	2.1	6.9	14.0	22.0	26.0	1.5	na	na
Domestic crush	—	—	—	—	—	na	na	na
Palm—								
Imports	43.3	71.4	60.0	75.0	80.0	1.3	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.2	.5	3.0	10.0	18.0	1.4	na	na
Domestic crush	—	—	—	6.0	10.0	na	na	na
Soybean—								
Imports	5.4	15.2	23.0	34.0	40.0	1.2	na	na
Domestic crush	.7	2.0	4.0	10.0	40.0	na	na	na
Sunflower—								
Imports	.3	.2	4.0	6.0	7.0	1.3	na	na
Domestic crush	—	—	—	—	—	na	na	na
Total consumption²	114.6	188.9	250.7	339.3	414.0	na	18.9	29.6
Vegetable oil meals:								
Imports	36.9	48.0	80.0	200.0	600.0	1.8	na	na
Domestic crush	2.8	8.0	16.0	46.0	170.0	na	na	na
Consumption	39.7	56.0	96.0	246.0	770.0	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Corn oil, Saudi Arabia's second most important cooking oil, is projected to become the country's most important oil import by 1990. Mainly imported in consumer-ready containers, corn oil is marketed through new modern supermarkets. Saudi Arabia is the world's largest importer of corn oil with 1982 imports of 73,000 tons. Part of the reason for these large imports is the high quality and high-grade packaging of corn oil. Subsidies have kept the price relatively low. As supermarkets become more widespread, corn oil consumption will continue to rise. The Saudis are showing increased interest in doing their own packaging. By 1990, corn oil will be established as the most widely consumed cooking oil in Saudi Arabia, with imports of 140,000 tons. Singapore has been the largest supplier of these oils. But, as the quantities increase, Saudi Arabia will need to turn increasingly to U.S. supplies.

Saudi Arabia's other major cooking oil import is consumer-ready blended oils, sold mainly in supermarkets. Imports of these oils reached 54,000 tons in 1982. But, more widespread imports of bulk oils and domestic packaging should depress 1985 imports of blended oils to 51,000 tons. This trend is likely to continue, with 1990 imports at around 40,000 tons, slowed only by the increasing demand for all cooking oils. Singapore will be the major supplier.

Saudi Arabia also imports smaller but growing amounts of soybean oil, olive oil, cottonseed oil, and sunflower oil. Soybean oil is projected to become the largest of the secondary oils, with imports rising from 23,000 tons in 1982 to 40,000 tons in 1990. This will supplement the palm oil imports and be used in blending. Olive oil imports, used mainly as salad oil, will also grow from 1982 levels of 14,000 tons to 26,000 tons in 1990. Peanut, cottonseed, and sunflower oil imports will remain small, but 1990 imports are projected at 18,000 tons, 12,000 tons, and 7,000 tons, respectively. The United States has a good opportunity to supply some or all of this oil.

These imports will be supplemented by domestic crushing of imported oilseeds, an activity which is beginning in Saudi Arabia and expected to expand significantly by 1990. Although Saudi Arabia's crushings provided only 2,000 tons of oil in 1980, they should yield 50,000 tons of oil by 1990. Soybeans will account for most of this, although the Saudis are also planning to import peanuts for crushing. Soybean imports in 1982 of 20,000 tons will begin this effort. Imports of 200,000 tons are expected in 1990. Peanut imports should reach 30,000 tons by 1990. The peanuts will probably be supplied by Sudan, while Saudi Arabia is looking to the United States for its soybeans.

An important byproduct of this domestic crushing will be meal. With Saudi Arabia's planned expansion of livestock feeding, a great deal of oilseed meal will be needed for protein supplement. A major problem in Saudi feedlots is that too much grain is used in the feed mix. The meal obtained from local crushings will not, however, be sufficient to meet these needs. Saudi Arabia has been importing oilseed meal in quantities up to 50,000 tons. Imports will increase substantially to meet demand. A proper feed

mix would have required imports of about 300,000 tons in 1982, but no more than 80,000 tons were imported. As the Saudis change the composition of feed, however, their imports of oilseed meals should increase dramatically, to 600,000 tons in 1990. The Saudi market is likely to be split between the United States, Sudan, and Brazil.

## United Arab Emirates

About 70 percent of the cooking oil imported by the UAE in 1980 was consumed locally; the rest was transshipped. Per capita consumption of cooking oil has risen substantially over the last few years, from 12 kg in 1975 to 27 kg in 1980 (table 29). Present per capita consumption rates are nearing saturation levels, however, and growth will depend on both population growth and transshipments. Although transshipments are not expected to continue, the UAE population is expected to more than double, raising imports substantially.

Corn oil is the most popular oil in the UAE, accounting for about 60 percent of oil consumption. Its imports into UAE are the sixth largest in the world. Imported by private traders and sold mainly in small food outlets and supermarkets in small containers, corn oil is expected to remain the most popular cooking oil in the UAE; imports should reach 35,000 tons in 1990. The United States supplies most of the world's corn oil, but Singapore is likely to continue as the UAE's largest single supplier.

The UAE imports less soybean oil than corn oil, and much of the 15,000 tons of soybean oil imported in 1980 was transshipped to Iran. Transshipments, however, are likely to end soon. Consumption of soybean oil in the UAE will continue to grow, since soybean oil costs less than corn oil and since soybean oil is consumed by less affluent workers. Imports of 17,000 tons in 1982 are expected to decrease to 8,000 tons in 1985 and grow to only 10,000 tons in 1990. These small amounts could be supplied by a number of countries.

Other oils imported by the UAE include peanut, olive, sunflower, palm, coconut, and linseed. These are specialty imports not used extensively in cooking. Expected 1990 oil imports should grow to 4,000 tons of palm, 3,000 tons of olive, 2,000 tons of peanut, and 1,000 tons of sunflower. These oils will give the UAE in 1990 a total supply of 58,500 tons of cooking oil, which will raise per capita consumption levels slightly to 32.5 kg.

The UAE's small oilseed crushings will not appreciably augment its cooking oil or meal supplies for its growing livestock feeding operations. UAE is not importing oilseed meal, but rather imports already mixed poultry feed. As operations grow, however, the UAE will undoubtedly begin mixing its own rations and importing oilseed meal. Thus, although 1982 imports were not more than 2,000 tons, they should reach 75,000 tons by 1990. This is a new market; the nation taking the initiative is likely to dominate sales.



## Qatar

Qatar imports few oilseeds and products because of its very small population, low levels of livestock feeding, and low levels of cooking oil consumption. Qatar's population is expected to double by 1990, however, and the country is initiating widespread livestock feeding operations. Furthermore, per capita consumption of cooking oils is expected to increase tremendously as incomes rise and subsidies lower the price of cooking oil relative to butter.

Consumption of cooking oil has been rising in Qatar, from 3 kg per capita in 1975 to over 6 kg in 1980 (table 30). These low consumption rates are partly a result of high butter consumption, which in the late seventies was averaging about 6 kg per capita. Total cooking fat intake is still low, however, and oil consumption is expected to grow as Qatar approaches consumption levels commensurate with its high income levels and the levels of other Persian Gulf countries.

Table 29—UAE: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Oilseeds:								
Peanuts—								
Production	—	—	—	—	—	na	na	na
Imports	0.10	1.50	2.00	5.00	8.00	NA	2.4	4.4
Soybeans—								
Production	—	—	—	—	—	na	na	na
Imports	0.00	0.00	3.00	7.00	15.00	NA	na	na
Cooking oils:								
Coconut—								
Imports	.80	.40	.50	.50	.50	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Corn—								
Imports	4.80	14.40	18.00	29.00	35.00	1.6	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	.04	.10	.10	.10	.10	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	.37	.70	1.40	2.00	3.00	1.8	na	na
Domestic crush	—	—	—	—	—	na	na	na
Palm—								
Imports	2.10	1.60	3.00	3.50	4.00	1.3	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.06	.01	1.00	1.30	2.00	1.5	na	na
Domestic crush	—	—	—	—	—	na	na	na
Soybean—								
Imports	.60	15.10	17.00	8.00	10.00	1.4	na	na
Domestic crush	—	—	.60	1.00	3.00	na	na	na
Sunflower—								
Imports	.16	1.06	1.00	1.00	1.00	1.6	na	na
Domestic crush	—	—	—	—	—	na	na	na
Total consumption	8.90	33.30	42.50	46.30	58.50	na	27.4	32.5
Vegetable oil meals:								
Imports	.02	0.00	2.00	40.00	75.00	NA	na	na
Domestic crush	—	—	2.40	4.00	6.00	na	na	na
Consumption	.02	—	4.40	44.00	81.00	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.

<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Qatar imports a variety of cooking oils, mainly in consumer-ready containers. Corn oil is Qatar's major cooking oil, accounting for over 80 percent of total oil imports in 1980. Small amounts of olive and peanut oil accounted for most of the other imports. Corn oil will remain Qatar's major cooking oil import, with 1982 imports of 2,000 tons projected to grow to 6,000 tons in 1990. Peanut oil imports should grow to 3,000 tons by the end of the decade. Imports of soybean and olive oil should each grow to 2,000 tons. Sunflower oil is also expected to be imported, reaching 1,000 tons by 1990. Qatar's 1990 oil imports will reach 14,000 tons, enough to allow per capita consumption of 28 kg, about the level of U.S. consumption.

Qatar's cooking oil imports are not expected to be supplemented by local crushing of either domestically produced or imported oilseeds. Its livestock feeding program,

however, will require oilseed meals, and these will have to come from imports. Qatar imported about 2,000 tons of meal each year in the midseventies, but in the later seventies and early eighties, these imports fell off for no apparent reason. They should, however, recommence and grow rapidly from 5,000 tons in 1982 to 40,000 tons in 1990. These imports will occur in small lots, and the suppliers will depend on marketing initiatives.

## Kuwait

Kuwait is not a large importer of oilseeds or products. It is, however, a rapidly growing importer of both oilseeds and products, with product imports far larger than oilseed imports. Rapid population growth and substantial increases in per capita consumption have been largely responsible for this growth, in addition to the transshipment trade to

Table 30—Qatar: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Peanuts—								
Production	—	—	—	—	—	na	na	na
Imports	0.010	0.070	0.150	0.150	0.250	NA	na	na
Cooking oils:								
Corn—								
Imports	.550	1.300	2.000	4.000	6.000	1.5	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	.200	.000	.300	.300	.300	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	.090	.100	.800	1.600	2.000	1.6	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.000	.100	1.000	2.000	3.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Soybean—								
Imports	.040	.100	.900	1.700	2.000	1.3	na	na
Domestic crush	—	—	—	—	—	na	na	na
Sunflower—								
Imports	.020	.100	.200	.600	1.000	1.3	na	na
Domestic crush	—	—	—	—	—	na	na	na
Total consumption <sup>2</sup>	.700	1.700	4.900	9.900	14.000	na	6.3	28.0
Vegetable oil meals:								
Imports	.002	.500	5.000	20.000	40.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Consumption	.002	.500	5.000	20.000	40.000	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.

<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

Iraq and Iran. Although these shipments have not been comparatively large for Iraq and Iran, volumes transshipped have constituted a substantial part of Kuwait's trade. Kuwait's imports can be expected to continue growing rapidly, since the population is expected to soar over the next decade and per capita consumption levels are still relatively low.

Kuwait imports a large variety of cooking oils. Some are imported by the Government and sold at subsidized prices. Others, usually of higher quality, are sold by private traders. Together, these supplies have allowed a substantial increase in per capita consumption, from only 6.5 kg in 1975 to nearly 16 kg in 1980 (table 31). Palm oil is Kuwait's largest cooking oil import, accounting for nearly half the

Table 31—Kuwait: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Peanuts—								
Production	—	—	—	—	—	na	na	na
Imports	0.50	1.20	14.00	20.00	23.00	NA	0.9	5.6
Sesame seed—								
Production	—	—	—	—	—	na	na	na
Imports	1.20	2.00	3.50	4.20	5.00	1.3	1.5	2.3
Soybeans—								
Production	—	—	—	—	—	na	na	na
Imports	1.10	5.60	15.00	19.00	36.00	1.6	na	na
Cooking oils:								
Coconut—								
Imports	.15	.19	.50	.50	.50	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Corn—								
Imports	1.50	5.30	7.00	18.00	23.00	1.6	na	na
Domestic crush	—	—	—	—	—	na	na	na
Linseed—								
Imports	.12	0.00	.10	.10	.10	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	2.60	3.30	6.00	7.50	10.00	1.8	na	na
Domestic crush	—	—	—	—	—	na	na	na
Palm—								
Imports	0.00	9.50	14.00	16.00	20.00	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.02	.04	.20	.90	1.00	NA	na	na
Domestic crush	—	—	2.40	3.00	4.00	na	na	na
Soybean—								
Imports	.67	.92	2.00	3.00	5.00	1.2	na	na
Domestic crush	.20	2.00	3.00	3.80	7.00	na	na	na
Sunflower—								
Imports	.04	0.00	.10	.10	.10	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Total consumption <sup>2</sup>	5.20	21.30	35.20	52.80	70.60	na	15.8	33.1
Vegetable oil meals:								
Imports	1.60	14.10	20.00	50.00	75.00	1.8	na	na
Domestic crush	.90	4.50	12.00	15.00	29.00	na	na	na
Consumption	2.50	18.60	32.00	65.00	104.00	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.

<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



total imports in 1980. It is imported by KSC for sale at subsidized prices, as are much smaller amounts of soybean oil. Kuwait's second largest cooking oil import is corn oil, which is of much higher quality. Corn oil is imported by private traders, often in consumer-ready containers. Increases in incomes and preference for high quality should make corn oil Kuwait's largest oil import by 1990 at 23,000 tons. Private traders also import some olive oil and small amounts of peanut and coconut oil.

Palm oil will remain the main cooking oil for the lower income migrant workers. Imports of palm oil should grow to 20,000 by 1990 from 14,000 tons in 1982. Soybean oil will continue to supplement these supplies, with imports projected to grow to 5,000 tons by 1990. Soybean oil could displace palm oil if marketing efforts are undertaken. Olive oil will also see continued growth, especially as a result of increasing incomes.

These imports will be supplemented by oil obtained from crushing imported oilseeds. KSC imports peanuts and soybeans for crushing; these provided slightly more than 1,000 tons of oil in 1980. These imports should increase substantially, since KSC is very interested in expanding its processing capabilities. Imports of soybeans in 1990 should grow to 36,000 tons while peanut imports should be 23,000 tons, providing an additional 11,000 tons of cooking oil for the local market. While India and Sudan are likely to supply the bulk of the peanuts, the United States is a potential supplier of the soybeans.

Kuwait's crushings will also provide oilseed meal to be used in concentrate rations in both poultry and dairy feeding operations. Local crushing has not, however, been adequate for demand, a situation likely to continue. Meal imports should boom as livestock production grows significantly. Imports in 1980 took a significant jump over their 1979 level, nearly tripling. Imports are expected to grow to 75,000 tons by 1990. Most of these imports, at least initially, will be purchased in small lots which precludes bulk handling, unless KSC decides to become the sole importer. The United States has been the dominant supplier.

## Iraq

Iraq has long been a large importer of oilseeds and their products. Soybeans have been imported and crushed, and both cooking oil and oilseed meal have been imported. This trade is handled by the Government, which has had as major goals the elimination of cooking oil shortages and increased livestock feeding. The recent war with Iran interrupted progress toward these goals.

Iraq's 1980 expenditures on cooking oils amounted to \$83 million, equal to expenditures on meat. Cooking oil has been imported by Iraq because local oilseed production is too small to yield appreciable quantities of oil. Imports have grown particularly since the midseventies, when Iraq became more consumer-oriented and subsidies were

provided for cooking oil purchases. Imports stabilized because of the war with Iran. Per capita consumption of cooking oils dropped from 11 kg in 1975 to 10 kg in 1980 (table 32).

Palm oil is the dominant oil in Iraq, dwarfing all other vegetable oil imports. It is not produced locally; probable reasons for its dominance are its generally low price and the closeness of the large exporters—Singapore, Malaysia, and Indonesia—all of which ship mainly refined oil to Iraq. Imports of palm oil dropped to 119,000 tons in 1980 from their 1979 level of 140,000 tons. This was a direct result of the closing of the port of Basra to commercial shipping due to the war. The drop seems to have had nothing to do with changing tastes. The Iran war continued through 1982 and imports remained at 120,000 tons. Pent-up demand is likely to cause rapid growth. If most of this is satisfied by palm oil, 1990 imports will reach 185,000 tons. Iraq's traditional suppliers will continue to control this trade.

Imported palm oil accounted for 90 percent of all oil consumed in Iraq in 1980. Other oil imports were relatively small. Most imported cooking oil was either sunflower, coconut, or olive. Soybean oil has not been imported since the midseventies. Although some increase in imports of all these oils can be expected during the decade, they are not likely to displace palm oil unless very major efforts are undertaken by exporters. This growth, however, combined with increased palm oil imports, will allow per capita consumption to rise to 17 kg in 1990, a much more reasonable level given Iraqi incomes.

Iraq has supplemented its oil supplies by importing soybeans for crushing. These have been imported primarily by public companies to obtain meal for large poultry projects. Such imports were ended when the war with Iran began. When the war ends and ports are reopened, Iraq is expected to substantially increase its imports, both because of demand for both oil and meal and its interest in doing its own crushing. Although no imports were recorded in 1982, they should be 200,000 tons in 1990. Brazil has traditionally been the only supplier of soybeans to Iraq, but the United States also has opportunities.

Iraq also imports oilseed meal to supplement local supplies. Imported meal has been the largest source of meal in the country. But, like other products, its imports have suffered because of the war with Iran. If it is to continue with its ambitious livestock expansion program after the war, Iraq will need much greater amounts of oilseed meals. Even though greater supplies are expected from local crushing, meal imports can be expected to grow tremendously. Meal imports in 1982 remained insignificant because of transport problems; but, such imports should grow to more than 500,000 tons by 1990. Like soybeans, Brazil has supplied most of Iraq's meal imports; but, there are opportunities for the United States.

Table 32—Iraq: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption¹	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Cottonseed—								
Production	10.000	11.000	9.000	15.000	30.000	na	na	na
Imports	—	—	—	—	—	NA	na	na
Peanuts—								
Production	1.000	1.000	1.000	5.000	10.000	na	na	na
Imports	.200	0.000	0.000	.500	.800	NA	0.1	0.5
Soybeans—								
Production	2.000	2.000	2.000	10.000	20.000	na	na	na
Imports	39.900	15.000	0.000	50.000	200.000	1.5	na	na
Sunflower—								
Production	5.000	5.000	5.000	10.000	25.000	na	na	na
Imports	—	—	—	—	—	NA	na	na
Cooking oils:								
Coconut—								
Imports	1.800	1.600	1.000	5.000	9.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Cottonseed—								
Imports	0.000	0.000	0.000	10.000	18.000	NA	na	na
Domestic crush	2.500	2.800	2.300	3.800	7.500	na	na	na
Linseed—								
Imports	0.000	0.000	0.000	.400	1.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	1.100	1.000	1.200	4.000	8.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Palm—								
Imports	137.000	119.000	120.000	170.000	185.000	1.8	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.010	0.000	.010	1.000	2.000	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Soybean—								
Imports	.003	0.000	0.000	20.000	55.000	NA	na	na
Domestic crush	8.400	3.400	.400	12.000	44.000	na	na	na
Sunflower—								
Imports	1.000	6.000	10.000	15.000	18.000	NA	na	na
Domestic crush	1.400	1.400	1.400	2.800	6.900	na	na	na
Total consumption²	153.200	135.200	136.300	243.300	353.400	na	10.0	16.7
Vegetable oil meals:								
Imports	82.800	37.000	30.000	200.000	500.000	1.6	na	na
Domestic crush	45.200	26.00	12.400	67.200	218.00	na	na	na
Consumption	128.00	63.000	42.400	267.200	718.000	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

## Iran

Iran, with the most people of any of the eight study countries, is the largest importer of oilseed products. Its imports of cooking oils are the fifth largest in the world. Iran is also the region's leading importer of oilseed meals which are used in animal feeding. Like the other countries, Iran is not a large importer of oilseeds. Small amounts of oilseeds, mainly soybeans, cottonseed, and sunflower seed, are grown locally in Iran. But, in 1980, these three oilseeds yielded less than 50,000 tons of oil, about 10 percent of total requirements. Some growth in domestic output can be expected and crushing of imported oilseeds is expected to increase. But, Iran's growing population and increasing per capita consumption will lead to substantially larger imports of oilseeds and products.

Iran's expenditures on imported vegetable oils in 1980 totaled nearly \$300 million, representing a substantial rise since the early seventies when animal fats and ghee were consumed more widely. Although imports dropped in 1979 because of the Islamic revolution, they are again increasing. Per capita consumption of cooking oils has risen only slightly from 10 kg in 1975 to about 12 kg in 1980; severe shortages exist in Iran despite rationing (table 33). Most recent growth in imports has thus resulted from population increases.

Soybean oil is Iran's largest vegetable oil import, accounting for over 75 percent of total consumption in 1980. Iran grows some soybeans from which about 20,000 tons of oil are produced; but, most soybean oil is imported. By the end of the decade, soybean oil production should increase dramatically as domestic bean production increases and more beans are imported. But, production increases will do little to dampen imports. Iran's imports of soybean oil, reaching 400,000 tons in 1982, should grow to 510,000 tons in 1985 since the Government is beginning a program to reduce shortages and raise consumption levels. By 1990, approximately 575,000 tons should be needed but soybean oil consumption will fall to 70 percent of total vegetable oil use from present levels of 75 percent. The United States has traditionally been the largest supplier of cooking oils but, because of recent political developments, U.S. exports have stopped. Brazil has captured most of the market, along with Spain and the EC. The United States could again become a major supplier if relations improve.

Cottonseed oil is the major oil produced in Iran, a country with fairly large cotton production. Cottonseed oil has also been Iran's second largest vegetable oil import. Cottonseed oil production is expected to increase to its late seventies' level after a severe drop in the early eighties, but not enough to have any great effect on supply needs. This does not necessarily mean cottonseed oil imports will increase, since cottonseed oil is not especially preferred to other oils. Also, there are few suppliers other than the United States, which has 80 percent of the world market. Cottonseed oil imports fell from 40,000 tons in 1979 to only 2,000 tons in 1980. Imports in 1982 were

again trivial. But, they should reach their late seventies' level of 60,000 tons in 1990, assuming that the United States and Iran resume better relations.

A third oil also produced and imported by Iran is sunflower oil. Sunflower seed provides the smallest amount of total domestic oil production at about 1,100 tons in 1980, which appears to be the bottom of a downward trend. Sunflower oil imports have fluctuated, reaching 35,000 tons in 1969 but dropping to 6,000 tons in 1972. In 1975, sunflower oil imports reached 46,000 tons, but stopped in 1978. They rose to 45,000 tons in 1980, coming mainly from Eastern Europe. Sunflower oil is a high-quality oil and appeals to the wealthy class. Its imports should become more steady, with imports of 75,000 tons in 1990. Eastern Europe is not a regular supplier. The United States or Argentina will have to become active in the market for these import levels to be sustained.

Other oils—mostly specialty items—are imported in much smaller amounts. An exception to this has been palm oil, which was imported in trivial amounts until 1980, when nearly 24,000 tons were imported from the EC. These imports were to alleviate shortages on a short-term basis, but they will probably also encourage Iran to develop relations with more traditional palm oil suppliers such as Malaysia, Singapore, and Indonesia. In addition, Iran is expected to import increasing but still small amounts of olive and peanut oil. These combined with the other oil imports and local production, will allow Iran to increase its per capita consumption to nearly 18 kg in 1990, still not a large quantity.

Iran has imported large quantities of oilseed meal to supplement its domestic production. Iran's emphasis on livestock feeding has led to increasing meal imports. These imports increased from only 5,000 tons in 1970 to nearly 200,000 tons in 1980, making Iran the Middle East's largest importer. Along with its increased corn imports, Iran will import substantially more meal during the decade. Imports should grow to 850,000 tons in 1990. While the United States had completely dominated this market, Brazil became almost the sole supplier in 1980. This Brazilian role is likely to continue until relations with the United States return to normal.

Meal imports are high and will continue to grow largely because Iran has not shown interest in importing seeds to be crushed locally. There is crushing of locally produced soybeans and cottonseed, which in 1980 provided about 120,000 tons of meal. Local production is not expected to grow much, however, because of a lack of mechanization and competition from higher value crops.

Iran should begin importing fairly large quantities of soybeans, up to 100,000 tons by 1990, to supplement local production and to provide additional oil and meal for the local market.



Table 33—Iran: Oilseed product production, imports, and consumption

Commodity	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption <sup>1</sup>	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Oilseeds:								
Cottonseed—								
Production	240.00	120.00	150.00	200.00	260.00	na	na	na
Imports	—	—	—	—	—	NA	na	na
Peanuts—								
Production	3.00	3.00	3.00	5.00	10.00	na		na
Imports	1.00	1.00	4.00	7.00	10.00	1.2	.1	.2
Sesame seed—								
Production	4.00	4.00	4.00	6.00	12.00	na	na	na
Imports	2.00	1.00	3.00	4.70	6.20	NA	.1	.4
Soybeans—								
Production	115.00	49.00	85.00	130.00	200.00	na	na	na
Imports	0.00	0.00	1.00	40.00	100.00	NA	na	na
Sunflowerseed—								
Production	20.00	4.00	17.00	32.00	40.00	na	na	na
Imports	1.10	0.00	2.00	2.00	2.00	NA	na	na
Cooking oils:								
Coconut—								
Imports	1.70	.20	1.10	1.70	2.00	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Corn—								
Imports	2.40	4.50	6.20	7.00	7.50	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Cottonseed—								
Imports	50.00	2.10	2.00	30.00	60.00	NA	na	na
Domestic crush	60.00	30.00	38.00	50.00	65.00	na	na	na
Linseed—								
Imports	.02	0.00	.20	.50	.70	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Olive—								
Imports	1.40	1.00	1.40	1.70	2.00	NA	na	na
Domestic crush	1.00	1.00	1.00	2.00	2.00	na	na	na
Palm—								
Imports	.10	23.70	14.00	22.00	28.00	NA	na	na
Domestic crush	—	—	—	—	—	na	na	na
Peanut—								
Imports	.01	0.00	.01	.05	.10	NA	na	na
Domestic crush	1.00	1.00	1.50	2.50	5.00	na	na	na
Soybean—								
Imports	312.00	319.00	400.00	510.00	575.00	1.7	na	na
Domestic crush	23.00	9.80	17.20	34.00	60.00	na	na	na
Sunflower—								
Imports	0.00	45.00	50.00	60.00	75.00	1.5	na	na
Domestic crush	5.90	1.10	5.30	9.50	11.80	na	na	na
Total consumption <sup>2</sup>	458.50	438.40	537.70	730.40	893.40	na	11.7	17.6
Vegetable oil meals:								
Imports	113.00	195.00	270.00	500.00	850.00	1.8	na	na
Domestic crush	288.00	133.00	197.00	313.00	470.00	na	na	na
Consumption	401.00	328.00	467.00	813.00	1,320.00	na	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Total of production and imports less transshipments divided by population.<sup>2</sup>Excludes linseed oil.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

## Chapter 7—Projections: High-Value Agricultural Products

There are many agricultural products with high unit values whose trade is less traditional, but becoming important. Fresh fruits and vegetables account for about half of this trade. The other half involves highly processed agricultural products which, in addition to high unit values, have a good deal of value added to the product through processing by the seller. They include canned foods, bakery products, beverages, sugar, and cigarettes, as well as smaller items such as instant coffee and candy.<sup>8</sup> For many of these products, the OPEC countries, even with their relatively small populations, are among the world's largest importers (table 34).

Projections made in value are in 1980 commodity prices. But the prices of most of these items increased much more rapidly than did their quantity traded during the seventies.

The Persian Gulf states where income growth has been the most pronounced show the greatest diversity of im-

ports of high-value products. In 1980, they dominated imports of fresh fruits and citrus, tobacco, canned fruits and vegetables, juices, beverages, and chocolate. By 1990, the same basic pattern will hold, although the extent of dominance will drop substantially in fresh fruits and citrus and beverages, while declining slightly in tobacco, canned fruits and vegetables, juices, and chocolate, and remaining unchanged in sugar, coffee and tea, and fresh vegetables.

There are several reasons for this pattern. First, these countries currently have few processing facilities, and imports do not face local competition. Second, the countries have no foreign exchange constraints, and have large enough reserves to withstand decreases in oil export earnings. Third, governments have not intervened to limit, or control, processed food imports.

Other countries (Algeria, Iraq, Iran) import fewer commodities (primarily sugar, tobacco, coffee, and tea) which are "staples," with Libya as an intermediate case. Foreign exchange constraints and policies are important forces shaping these import patterns. Algeria subsidizes sugar

<sup>8</sup>Dairy products, considered highly processed foods, are covered in chapter 5.

Table 34—Eight study countries: High-value agricultural product production, imports, and consumption

Commodity	Production			Imports			Consumption		
	Actual	Projected		Actual	Projected		Actual	Projected	
	1980	1985	1990	1980	1985	1990	1980	1985	1990
<i>Metric tons</i>									
Citrus	834	895	1,014	290	365	471	1,124	1,260	1,485
Coffee	—	—	—	83	108	130	83	108	130
Other fresh fruit	2,280	2,656	3,224	550	806	1,058	2,830	3,462	4,282
Sugar	646	789	853	2,569	4,513	6,007	3,215	5,302	6,860
Tea	29	33	40	109	156	194	138	189	234
<i>Million dollars</i>									
Bakery products	na	na	na	155	243	303	na	na	na
Beverages	na	na	na	226	202	203	na	na	na
Chocolate	na	na	na	70	109	133	na	na	na
Fresh vegetables	na	na	na	387	601	848	na	na	na
Fruit juices	na	na	na	226	436	631	na	na	na
Fruit preparations	na	na	na	51	77	108	na	na	na
Nuts	na	na	na	41	134	215	na	na	na
Tobacco and products	na	na	na	553	1,072	1,300	na	na	na
Vegetable preparations	na	na	na	347	462	624	na	na	na

— = Negligible.

na = Not applicable.

Source: U.S. Dept. Agr., Econ. Res. Serv.

and has imported potatoes to keep the price low. But, Algeria acts to restrict imports of many other high-value commodities even though consumer demand is apparently quite high. Libya has a more liberal import policy, but passed a resolution in 1981 to limit highly processed imports (although this is thought to be directed primarily toward private retailers). Iraq, the region's largest sugar importer, provides for a high level of per capita sugar consumption and has increased tobacco imports to meet pent-up local demand. But, Iraq places restrictions on imports of some fresh vegetables; the needs of the military may stimulate further imports of canned vegetables, however.

Suppliers of high-value products are diverse and, in many commodity groups, the United States has little real prospect of exporting to the region. The latter include sugar (where the EC is displacing Latin America as a supplier), fresh vegetables (supplied from other Middle Eastern and European countries), most fresh fruits (tropical or supplied by neighboring countries), and coffee and tea. On the other hand, the United States has supplied pulses to Algeria and has successfully exported apples to Saudi Arabia and the UAE. A variety of countries in Europe and Asia supply canned vegetables, fruits, and juices, with the United States exporting to Saudi Arabia, the UAE, and Kuwait. American cigarettes are popular in Algeria, Libya, Saudi Arabia (although British brands are preferred), Kuwait, and Iran (through third parties). The United States has also been a supplier of nonalcoholic beverages, although the construction of bottling plants throughout the region will limit exports to some countries.

Market development prospects exist for U.S. juice (mainly orange juice concentrate) in Libya, Saudi Arabia, and Kuwait; for chocolate products in Saudi Arabia and the UAE; and canned vegetables in Saudi Arabia and Kuwait. Pulses, onions, and potatoes could be developed as an export to Kuwait. The position of the United States as a supplier of cigarettes could be strengthened in Algeria.

## Algeria

Algeria imported \$641 million of high-value agricultural products in 1980, about 25 percent of that country's total agricultural imports. This compares with imports of high-value products in 1970 of only \$74 million. Moreover, Algeria has strong growth potential in further high-value imports as the population is becoming more wealthy, urbanized, and sophisticated. The decision rests with the Government which, although it is becoming more consumer-oriented, is still opposed to greatly expanding the number of imports. Those which are imported, however, will grow.

Algeria's major high-value product import is coffee, a high-value bulk item. The \$240 million worth imported in 1980 was much higher than coffee imports of any other study country. Algeria is one of the world's top coffee importers, ranking seventh in 1980. Coffee is the major drink in Algeria, while tea is more widely consumed in the Middle East countries. Coffee prices in Algeria are fixed;

when world prices rise to high levels, the price is automatically subsidized, leaving coffee an affordable item. Algerians drink over 3 kg of coffee per capita per year, about 1 kg less than U.S. consumption. Growth in coffee expenditures will depend mainly on population growth, since per capita consumption is not expected to rise significantly. Expected imports of coffee in 1985 are 81,000 tons, rising to 95,000 tons in 1990 (table 35). Algeria prefers to buy most of this coffee from African suppliers, but imports from Latin American countries as well.

Algeria is also a large exporter of refined sugar, a highly processed product. Algeria's total expenditures on sugar are greater than those on coffee, but this is because Algeria imports raw as well as refined sugar. Refined sugar accounts for almost two-thirds of sugar imports. Such imports in 1980 amounted to 275,000 tons, valued at \$179 million, making Algeria the world's ninth largest importer of sugar. Sugar prices are set and automatically subsidized when world prices rise. Sugar imports are, however, also partially determined by world prices and, in years of low world prices, Algeria will import large amounts to build stocks. An exception was in 1980 when total sugar imports increased to 550,000 tons in a year of very high world prices.

Consumption of sugar in Algeria is reasonably high by African standards at about 28 kg per capita yearly. But this is relatively low by world and Middle East OPEC country standards. U.S. per capita consumption is over 40 kg of sugar and more than 60 kg of all sweeteners. Most sugar in Algeria is consumed in hot drinks. There is a growing demand for pastries and a severe shortage of soft drinks, both portending large increases in consumption. Because of low world prices, Algeria's 1982 total sugar imports increased substantially to 620,000 tons. This upward trend will continue, raising needed imports to 1 million tons by 1990. Most of this will be refined sugar. Algeria has shown little interest in increasing its own refining of imported raw sugar. Price differentials between raw and refined are too narrow to encourage further expansion of Algerian refining. Latin American suppliers have traditionally been Algeria's largest sugar suppliers. But, if EC policies remain in effect, the EC will likely command almost all of Algeria's refined sugar imports.

Algeria's only other major import of a high-value product is of fresh and dried vegetables, almost totally pulses and potatoes. In 1980, these imports amounted to over \$150 million, of which 66 percent were pulse imports. Algeria is one of the world's top importers of pulses, with only the EC and Mexico importing larger amounts in 1980. Algeria's pulse imports are mainly dried peas and lentils; it has been the largest customer of the United States for these commodities. Imports of pulses are expected to show continued growth, but not at the tremendous rates of the late seventies. Algeria's pulse production has been static at about 65,000 tons, but the Algerians expect to raise production to 100,000 tons by 1990. About 100,000 ha are devoted to production of broad beans, lentils, and chickpeas, supplying only about 60 percent of demand. Some of the pulses are planted on fallow cereal land each year.



Because of imports, there are not now the severe shortages that existed a few years ago. Imports in 1982 grew slightly to 118,000 tons, and they are projected to grow at a reasonably steady rate to 170,000 tons in 1990.

The Algerians, pleased with the quality and prices of U.S. pulses, should retain the United States as a major supplier. Algeria has also recently signed a multiyear agreement with Argentina which among other things calls for the supply of 10,000 tons of white French beans. Other large pulse suppliers will include Turkey and the EC.

Algeria's imports of \$53 million of potatoes in 1980 make it an importer second only to the EC. Algeria, which produced 475,000 tons of potatoes in 1980 from 75,000 ha, imports its seed potatoes because of a lack of facilities to store seed. Most of the imported potatoes are for eating,

however, and their imports increased dramatically in the late seventies. In 1980, another 200,000 tons were needed to fill the demand even though potato prices in Algeria are very high at about \$3 per kg. The Government is very concerned about these high prices; as potato production is not expected to grow significantly, more imports will be needed to keep potato prices low. Imports are projected to grow to 285,000 tons by 1985. Assuming moderate increases in production to 900,000 tons, an additional 470,000 tons will need to be imported to meet demand in 1990. All of these potatoes are likely to be supplied by the EC, as in the past, because of low shipping rates and short shipping time. ONACO is the importer, although they are distributed by OFLA.

Algeria's other imports of high-value agricultural products are small. There is the potential for rapid growth in other

Table 35—Algeria: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Citrus:								
Production	447.00	466.00	450.00	470.00	500.00	na	na	na
Imports	—	—	—	—	—	na	na	na
Consumption	447.00	466.00	450.00	470.00	500.00	NA	23.6	18.1
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	69.50	65.00	70.00	81.00	95.00	1.0	na	na
Consumption	69.50	65.00	70.00	81.00	95.00	na	3.3	3.4
Fresh fruit: <sup>1</sup>								
Production	49.00	55.00	55.00	80.00	130.00	na	na	na
Imports	16.00	19.00	37.00	56.00	63.00	1.9	na	na
Consumption	65.00	74.00	92.00	136.00	193.00	na	3.8	7.0
Sugar:								
Production	8.00	4.00	10.00	14.00	20.00	na	na	na
Imports	437.00	550.00	620.00	700.00	1,000.00	1.8	na	na
Consumption	445.00	554.00	630.00	714.00	1,020.00	na	28.1	36.9
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	4.20	10.00	11.00	12.00	14.00	1.2	na	na
Consumption	4.20	10.00	11.00	12.00	14.00	na	.5	.5
	Million dollars							
Chocolate imports	.03	0.00	1.00	2.00	3.20	NA	na	na
Fresh vegetable imports	109.00	152.00	166.00	193.00	278.00	1.5	na	na
Fruit juice imports	.03	.10	5.00	20.00	50.00	NA	na	na
Fruit preparations imports	.10	.90	1.00	5.00	15.00	NA	na	na
Nut imports	3.00	2.00	10.00	18.00	25.00	1.6	na	na
Sugar preparations imports	.10	.70	1.00	2.00	5.00	NA	na	na
Tobacco and products imports	31.00	30.00	40.00	85.00	100.00	1.8	na	na
Vegetable preparations imports	8.90	10.00	15.00	30.00	60.00	1.5	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

commodities, but this will depend more on the Government attitude towards expenditures on high-value agricultural products than on local demand. Constant shortages and high prices for many of these agricultural products show great consumer demand, but little Government responsiveness.

One such commodity is tobacco, both processed and unprocessed. Algeria imports about \$30 million of unprocessed tobacco, but almost no cigarettes. Cigarettes manufactured with this imported tobacco sell for about 50 cents per pack, but they are in short supply and are considered of low quality. Imported cigarettes, especially American brands, when found are considered prized items and much higher prices are paid. Algerian unprocessed tobacco imports will continue to grow, but the rate of growth will depend on the state tobacco manufacturing firm, SNTA, and ONACO, the importer of tobacco and cigarettes. The demand for more Algerian cigarettes exists, as does the demand for imported cigarettes. Algeria will continue to import mostly unmanufactured tobacco, approximately \$40 million a year, for the next few years. If the present leaning towards consumerism continues and greater amounts of cigarettes are imported, Algeria's expenditures could easily reach \$85 million in 1985 and \$100 million in 1990. The United States would be the biggest beneficiary of expanded cigarette imports as American brands are preferred in Algeria.

Algeria could also become a large importer of fresh fruits and nuts. Bananas were imported into Algeria throughout most of the seventies, but then imports were halted. In late 1981, however, OFLA imported nearly 20,000 tons of bananas, an amount larger than ever before. They lasted on the market only a few days. Algeria produces a substantial amount of citrus and grapes, but there are seasonal shortages of fruit. There are possibilities for apples. Algeria produces some apples of very low quality; these are very popular, but in short supply. Confectionary nuts also seem to attract the Government's attention, especially almonds, walnuts, and peanuts. ONACO has expressed a desire to increase imports.

Algeria does not import many canned vegetables. The Ministry of Commerce and ONACO have stated their opposition to increasing imports. It may, however, be only a matter of time before imports become necessary. Even at harvest, supplies of fresh vegetables are very high priced. They are not widely available during the off-season. In addition, Algeria is becoming a much more urbanized country with more women entering the labor force. These factors in other countries have led to greater demand for processed foods. Algeria does have its own processing industry under SOGEDIA. But, without local produce, the industry cannot expand and imports will be needed.

## Libya

Since coming to power in 1969, Muammar Qaddafi has kept the Libyan market well supplied with low-priced consumer items. Food, along with many other goods, has

been readily available at low prices. Qaddafi has been doing this by creating large supermarkets under Government ownership and management. These stores import a wide variety of consumer items, from cheese to television sets, and then sell them at low prices. The supermarkets are designed to compete directly with the small private retailers, and eventually absorb all of their functions. These supermarkets, continually expanding, are the main distribution points for a wide variety of consumer-ready foods, which are in high demand in Libya.

Libya's imports of high-value agricultural products (excluding dairy products) increased by over 1,000 percent between 1970 and 1980, from \$39 million to over \$400 million. In 1980, 77 percent of these imports were of highly processed items, including refined sugar, canned goods, fruit juices, bakery products, and tobacco. In addition, Libya imported in 1980 nearly \$100 million of high-value bulk items, mainly tea, fresh vegetables, and coffee. The Government intends to limit imports of these items; in late 1981, it passed a resolution restricting imports of many highly processed goods. This, however, is directed at private importers; sales of high-value agricultural products in Government supermarkets are expected to continue to increase.

Refined sugar has been Libya's major high-value product import. All of Libya's sugar imports are in refined form—nearly 128,000 tons in 1980—and they accounted for 98 percent of the sugar consumed in the country in 1980. Per capita consumption of sugar in Libya is among the highest in the world at 43 kg, a level about equal to the U.S. level, but consumption of other sweeteners is low. Expected per capita increases in consumption together with high population growth will lead to continued increases in sugar imports. Imports of sugar in 1982 were estimated to amount to 165,000 tons, due in part to demand and also because very low world prices allowed Libya to build its stocks (table 36). Purchases should reach 264,000 tons in 1990 when per capita consumption reaches 54 kg. This, of course, assumes that Libya continues to use sugar as its main sweetener rather than other types such as high-fructose corn syrup. The major suppliers of sugar to Libya are likely to be the EC, because of its proximity and low prices, and Cuba which has trade agreements with Libya. East Europe, in the past a major supplier, is not likely to continue because of stagnating production and high internal demand.

Libya also spends a substantial amount on tea imports, over \$40 million in 1980. With per capita consumption at nearly 5 kg, Libya has one of the highest rates of consumption in the world, higher than even the United Kingdom and Saudi Arabia. Little growth is expected in this consumption rate because of increasing availability of other drinks. Rapid growth in Libya's population, however, will cause continued growth in imports. These imports were estimated at 17,000 tons in 1982 and are projected at 24,000 tons in 1990. Some packaged tea will be purchased from the EC, but most of Libya's imports will continue to be supplied by the major Asian and African producers.

Libya has also imported increasing quantities of vegetable preparations since the midseventies. Expenditures in 1980 for vegetable preparation imports equaled those for tea. These preparations are largely canned vegetable products with tomato paste being the most important single item. Canned vegetable products are not as important in the Libyan diet as they are in the United States, but their popularity is growing rapidly. They are marketed through Government-owned supermarkets and small retailers. Canned tomato paste serves as an inexpensive alternative to juicing expensive fresh tomatoes while other canned vegetables alleviate seasonal shortages of fresh produce. Demand for these products is expected to grow substantially as they become more widely accepted and considered a necessary part of the diet. Imports in

1982 were estimated at a value of \$44 million. These should reach \$65 million in 1990. Greece, the major past supplier, will likely continue as the dominant supplier of these products, especially since entry into the EC makes many of its products eligible for export restitutions.

Canned fruit is not popular in Libya, but fresh fruit is highly demanded. Libya produces its own citrus and grapes, but imports large quantities of apples and bananas. Libya's imports of fresh fruit totalled more than \$30 million in 1980, second only to Saudi Arabia in the region. Apples account for slightly more than 50 percent of fruit imports while bananas are a bit less than 40 percent. Apples and bananas were originally an exotic food in Libya, but their popularity has now made them an expected part of the

Table 36—Libya: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Citrus:								
Production	37.0	39.0	35.0	42.0	57.0	na	na	na
Imports	—	—	—	—	—	NA	na	na
Consumption	37.0	39.0	35.0	42.0	57.0	na	12.9	11.7
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	3.0	2.5	3.0	3.3	4.0	1.6	na	na
Consumption	3.0	2.5	3.0	3.3	4.0	na	.8	.8
Fresh fruit: <sup>1</sup>								
Production	23.0	22.0	21.0	25.0	41.0	na	na	na
Imports	29.0	55.0	74.0	87.0	107.0	1.8	na	na
Consumption	52.0	77.0	95.0	112.0	147.0	na	25.5	30.1
Sugar:								
Production	2.0	2.0	2.0	3.0	3.0	na	na	na
Imports	114.6	127.6	165.0	187.0	264.0	1.5	na	na
Consumption	116.6	129.6	167.0	190.0	267.0	na	43.0	54.6
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	12.9	14.4	17.0	19.0	24.0	.6	na	na
Consumption	12.9	14.4	17.0	19.0	24.0	na	4.8	4.9
	Million dollars							
Bakery product imports	6.7	16.0	20.0	24.0	30.0	1.8	na	na
Beverage imports	6.3	15.5	20.0	35.0	20.0	1.1	na	na
Cereal preparations imports <sup>2</sup>	1.6	4.0	5.0	9.0	12.0	1.3	na	na
Chocolate imports	4.2	12.0	13.0	15.0	20.0	1.8	na	na
Fresh vegetable imports	9.9	11.5	14.0	16.7	21.0	1.4	na	na
Fruit juice imports	10.4	14.0	20.0	45.0	65.0	2.0	na	na
Fruit preparations imports	3.1	5.0	6.0	6.4	8.5	1.4	na	na
Nut imports	2.1	6.5	8.0	13.0	19.5	1.8	na	na
Tobacco and products imports	8.4	30.0	36.0	52.0	73.0	1.8	na	na
Vegetable preparations imports	3.0	35.5	44.0	53.0	65.0	1.5	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

<sup>2</sup>Other than bakery.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



diet. Per capita consumption of fruits is still relatively low, however, and growth can be expected because of very high incomes. Population increases will also contribute to the need for imports. Imports rose to an estimated \$36 million in 1982, and will likely reach \$53 million in 1990. Bananas will be largely supplied out of Central America, while the EC is likely to dominate the apple trade, at least until Libya's relations with the United States improve.

Libya's imports of tobacco cost only slightly less than those of fresh fruit. Most of Libya's tobacco imports are of cigarettes, over 80 percent of the total. Libyans, like most Arabs, are heavy smokers, but they have shown little interest in producing their own cigarettes. They are, however, chronically short of cigarettes, which more than anything else limits their consumption. Imports of cigarettes are expected to increase substantially. This expected increase is due in part to increasing population, but mainly as a result of increased consumption when shortages are alleviated. Unmanufactured tobacco imports are not projected to grow much, because Libyans prefer foreign-made cigarettes. Total imports of tobacco and products rose to \$36 million in 1982. By 1985, these imports should increase to \$52 million as shortages are eliminated, and then continue to grow to \$73 million in 1990. The United States has traditionally been Libya's largest supplier of cigarettes as American brands are the most popular in Libya. U.S. cigarette exports to Libya have grown despite recent political difficulties. The United States is likely to remain Libya's largest supplier.

Libya also imports smaller amounts of a large number of other high-value commodities. Items such as fruit juice, nonalcoholic beverages, bakery products, chocolate, and table nuts are mostly marketed through Libya's supermarket network. Although such items are still not consumed widely or in great quantities, they are becoming much more popular among Libyans. The Libyan consumer is rapidly becoming sophisticated and demanding high quality and exotic products. With many more women either working or becoming more affluent, greater amounts of processed food are being purchased. The Government, encouraging these trends by providing supplies, is not expected to discontinue its practices.

Imports of these products can be expected to increase substantially over the decade. Fruit juice imports should see the largest growth. Libya does produce citrus, but not in large enough quantities to provide juice for off-season consumption. Juice is likely to be consumed in larger quantities because of its good taste and nutritional properties. Imports will reach \$65 million by the end of the decade. Because of proximity, the EC and Spain will likely remain Libya's largest suppliers in the early years of the decade. As quantities grow larger, however, Brazil and the United States will likely become major suppliers, especially of orange juice concentrate, as neither Spain nor the EC specializes in concentrates.

Imports of other beverages, mainly carbonated soft drinks and mineral waters, will likely remain strong during the

early eighties, but decline somewhat later in the decade. The early growth in imports will be a result of the tremendous growth in demand that Libya, like all the region's countries, is experiencing. Imports of these beverages will stabilize and then decline to \$20 million in 1990. Austria, recently capturing the bulk of this market, is expected to continue its dominance, but with stiffer competition from the EC, which is also interested in exporting more beverages.

Imports of many other processed foods, such as chocolate, bakery products, and table nuts, can also be expected to grow rapidly during the decade. These products, while not necessities, are demanded as incomes rise. By 1990, imports of all these products are expected to at least be triple their 1980 levels.

## Saudi Arabia

Saudi Arabia is the largest importer of high-value products in the Middle East as well as one of the world's largest importers of such products. Almost every imaginable product is imported to fill the shelves of the growing number of large, modern supermarkets. Saudi Arabia has almost no domestic processing industry, but the products typical to American or European supermarkets are in high demand. Even with its very small population, Saudi Arabia has become one of the world's largest importers of bakery products, fruit juices, canned vegetables, nonalcoholic beverages, and cigarettes among many other goods. Imports of high-value products totaled \$1.7 billion in 1980, up from only \$80 million in 1970. Because of the growing preponderance of supermarkets in Saudi Arabia, and the growing acceptability of processed foods to the population, imports of high-value agricultural products are expected to increase substantially, but at rates slower than those experienced during the seventies.

Saudi Arabia's major import is tobacco and its products. Imports of tobacco amounted to \$240 million in 1980, over 90 percent of which were cigarettes (table 37). Consumption of cigarettes in Saudi Arabia is high but not evenly distributed. Smoking among women is not widespread and many of the poorer workers cannot afford all the cigarettes they would like even though they cost only 45 cents per pack. Demand for cigarette imports is also kept high because many are smuggled into Jordan and Yemen. They are also bought in large quantities as gifts by workers returning to their homelands. This transit trade excluded, however, the average Saudi male consumes 10 cigarettes per day, an amount equal to the U.S. consumption rate.

Saudi cigarette imports have been booming year after year for quite some time. Although their rate of growth is projected to slow, the actual amount of annual increase will remain the same. This is a result of numerous factors: population is growing rapidly in Saudi Arabia; per capita consumption will likely increase as income becomes more evenly distributed; and the transit trade will continue as smuggled Saudi cigarettes without duty are very cheap. The Saudis have shown no inclination to import

tobacco to manufacture their own cigarettes. Imports of tobacco and products, still mainly cigarettes, should reach \$480 million in 1990. Cigarettes manufactured in the United Kingdom are the favorite in Saudi Arabia; the EC will thus remain Saudi Arabia's largest supplier. The United States is the second largest supplier of cigarettes and should remain so. Many American cigarettes are trans-shipped through European duty-free ports, however, which if sent directly would give the United States an even larger share.

Sugar imports in 1980 reached \$220 million, \$190 million of which was refined. The Saudis have not developed their own refining capacity because of low price of the

processed product relative to its raw material price. The small amount of raw sugar which is imported is sold raw rather than refined; imports of raw sugar have remained fairly steady at about 40,000 tons. Imports of refined sugar, on the other hand, have boomed in recent years. Per capita consumption nearly doubled from 17 kg in 1975 to 30 kg in 1980 as subsidies kept the price low and stable.

Sugar, an important part of the Saudi diet, is consumed largely in hot drinks. Saudi Arabia is moving heavily into the processing of soft drinks, bakery products, and candy, however, and sugar imports should grow at even higher rates during the decade. Imports were estimated at 350,000 tons in 1982, largely because low world sugar prices al-

Table 37—Saudi Arabia: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons			Coefficient			Kg/yr	
Citrus:								
Production	14.0	17.0	17.0	19.0	26.0	na	na	na
Imports	128.0	163.0	195.0	230.0	280.0	1.4	na	na
Consumption	142.0	180.0	212.0	249.0	306.0	na	17.0	21.9
Coffee: <sup>1</sup>								
Production	—	—	—	—	—	na	na	na
Imports	12.6	11.1	13.0	16.0	20.0	1.1	na	na
Consumption	12.6	11.1	13.0	16.0	20.0	na	1.1	1.4
Fresh fruit: <sup>2</sup>								
Production	61.0	84.0	94.0	116.0	168.0	na	na	na
Imports	166.0	258.0	242.0	280.0	378.0	1.5	na	na
Consumption	227.0	342.0	336.0	396.0	546.0	na	34.2	39.0
Sugar: <sup>3</sup>								
Production	—	—	—	—	—	na	na	na
Imports	133.0	293.0	350.0	450.0	600.0	1.8	na	na
Consumption	133.0	293.0	350.0	450.0	600.0	na	29.3	42.9
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	17.0	16.0	18.0	19.0	21.0	.9	na	na
Consumption	17.0	16.0	18.0	19.0	21.0	na	1.6	1.5
	Million dollars							
Bakery product imports	61.5	90.0	107.0	130.0	161.0	1.6	na	na
Beverage imports	177.0	150.0	80.0	70.0	50.0	.5	na	na
Chocolate imports	18.0	25.0	30.0	40.0	45.0	1.9	na	na
Fresh vegetable imports	27.0	100.0	155.0	180.0	200.0	1.7	na	na
Fruit juice imports	39.0	182.0	240.0	300.0	400.0	2.1	na	na
Fruit preparations imports	14.0	36.0	43.0	50.0	60.0	NA	na	na
Nut imports	3.9	18.0	40.0	70.0	120.0	NA	na	na
Spice imports	50.0	85.0	110.0	170.0	245.0	NA	na	na
Tobacco and products imports	95.0	240.0	310.0	400.0	480.0	1.5	na	na
Vegetable preparations imports	75.0	113.0	120.0	155.0	190.0	1.9	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Roasted only.

<sup>2</sup>Other than citrus. Does not include dates.

<sup>3</sup>Includes sugar preparations.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



lowed Saudi Arabia to build its stocks. Imports of 450,000 tons will be needed by 1985 to meet growing consumer and industrial demand. Imports are projected to reach 600,000 tons by 1990, raising per capita consumption to nearly 43 kg. These will be almost totally refined sugar, with the EC supplying the greatest part. If local demand does not curtail exports, Eastern Europe could also remain a large supplier. Sudan could also supply significant amounts.

Fresh fruit was once considered exotic in Saudi Arabia. Fresh apples imported from Lebanon for a short period each year were in high demand. Only a small amount of citrus was available in other seasons, and that was imported. Fruit production has expanded steadily since the early seventies, however. Total production was 84,000 tons in 1980. New peach and apricot orchards, new vineyards, and increased application of fertilizer have contributed to the increase. Fresh fruit is a year-round important part of the Saudi diet, and nearly \$200 million worth was imported in 1980.

Citrus makes up the largest part of Saudi Arabia's fruit imports with 195,000 tons imported in 1982. Citrus consumption is high at 17 kg per capita (per capita U.S. consumption is 13 kg), but many oranges are squeezed for juice or eaten by Hajj pilgrims. A few tons go to Yemen. Imports will continue to grow, mainly because of population growth. Imports will reach 280,000 tons in 1990. Jordan, Lebanon, Morocco, Spain, and Egypt are likely to remain the largest suppliers because of their proximity.

Apples are also an expensive fresh fruit import for Saudi Arabia. Originally imported from Lebanon, they now also come from the United States, Chile, and the EC, assuring year-round supplies at low prices (about 14 cents per apple). Per capita consumption of apples is 7 kg, about the same as in the United States, but apples are eaten by millions of Hajj visitors each year and some are shipped to Yemen. There is, therefore, still room for further growth in imports. Imports increased to 87,000 tons in 1982 and will likely reach 168,000 tons in 1990. Major suppliers should remain unchanged.

Bananas are imported in large quantities; their per capita consumption is higher than in the United States at over 13 kg. With consumption this high, most growth in imports during the decade will be a result of population growth. Banana imports are expected to reach 170,000 tons in 1985 and 210,000 tons in 1990. The Philippines and Central American countries will be the largest suppliers. These imports, together with citrus and apple imports, will continue to be the bulk of Saudi fresh fruit imports. They will be valued at \$285 million by 1990.

Saudi Arabia was the world's second largest importer of fruit juices in 1980, superseded only by the EC. While most countries, including the EC and the United States, import fruit juices mainly as concentrates, the Saudis import mainly whole drinks ready for consumption. And those concentrates which are imported are in consumer-

ready form rather than bulk. The Saudis are beginning to show interest in importing large quantities of bulk fruit juices and packaging them both frozen and reconstituted domestically. Local production of inexpensive soft drinks (about 15 cents for a 12-oz can) will give fruit juices strong competition. But, because of the high price of drinking water and the rapid population growth, the value of fruit juice imports is likely to continue growing. Value of these imports should reach \$400 million in 1990, with a large amount of bulk concentrate being imported. Japan, the United States, and the EC are the largest suppliers. But, as the trend to concentrates increases, the United States and Brazil should dominate the trade.

To supplement their imports of fruit juices, the Saudis have also imported large amounts of other beverages, mainly soft drinks.<sup>9</sup> Saudi Arabia was the world's largest importer of nonalcoholic beverages in 1980. The days of these large imports are numbered, however, as the domestic production of soft drinks is rapidly expanding; four new plants have recently opened. Imports were estimated to have declined to \$80 million in 1982 and are projected at \$50 million in 1990. Products which are imported will be mainly the smaller name brands, with Japan, the EC, and the United States supplying most of them.

Fresh vegetables, like fresh fruits, are now in year-round demand. The Saudis have been quite successful in their own production, employing some of the world's most advanced irrigation and greenhouse technology. Output of horticultural crops has soared so that most fresh vegetables sold in Saudi Arabia are now locally produced. New irrigation facilities and improved marketing centers caused many farmers in the Jizan and Qassim areas to shift from grains to vegetables. Use of excellent seeds as a result of generous subsidies and heavy use of fertilizers has resulted in some of the world's highest yields for tomatoes and cucumbers grown under irrigation. Tomato production in 1980 was estimated at 560,000 tons, nearly a sixfold increase since 1970. Total vegetable production of about 2 million tons was nearly double the 1971-73 average output.

Because of the extremely harsh climate, most vegetables can only be grown during the cool season. Fresh vegetables must be imported at other times. These imports amounted to \$100 million in 1980 and comprised a wide range of produce. The decade will see continued growth in these imports because of the climatic limitations on domestic production. Imports are projected at \$200 million by 1990. Jordan, Lebanon, Turkey, India, and Pakistan will likely remain the largest suppliers, but almost every country in the world ships some fresh produce to the Saudis. No one country will dominate the market.

To further supplement its fresh vegetable production, Saudi Arabia has become one of the world's largest import-

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<sup>9</sup>A confusing factor here is that many beverages classified as fruit juices by the Saudis are considered soft drinks by other countries.



ers of vegetable preparations, mainly canned vegetables. Very large quantities of tomato paste are imported, as well as other canned vegetables and canned soups and sauces. Because of the favorable reception canned goods are receiving in supermarkets, their importance in the Saudi diet can be expected to grow. The Saudis would like to begin producing their own paste, but the high demand for fresh tomatoes when in season will limit this; this production will not displace imports. Because of low world prices for tomato paste in 1982, however, the value of imports increased only slightly to \$120 million. Imports in 1985 are expected to reach \$155 million as strong growth continues. Influenced by increased population and the importance of canned goods in the Saudi diet, imports should be worth \$190 million in 1990. The EC, the United States, Spain, Greece, and Turkey will continue to be the largest suppliers as they are the world's largest exporters. But just about every country will make some sales there.

Saudi Arabia was the world's second largest importer of bakery products in 1980 following the United States. The demand for bakery products in Saudi Arabia has been very strong in recent years as biscuits, crackers, and cookies have become popular snack foods. Although these products comprise the bulk of the imports, fancy cakes, pies, and even bread are being imported as well. The Government is beginning to encourage local production of some of these products, but these efforts will not likely be effective until late in the decade. Even then, production will only dampen rather than displace imports as demand continues to grow. Imports are projected to grow from \$107 million in 1982 to \$130 million in 1985. With increasing domestic output, however, imports of bakery products should reach only \$161 million by 1990. The EC, by far the world's largest exporter of bakery products, can be expected to supply most of this.

Saudi Arabia's imports of spices, increasing substantially in recent years, can be expected to show further gains. Growing amounts of spices are being sold in supermarkets in consumer-ready packages rather than the traditional spice markets. This marketing technique is one factor increasing the values of imports. But the bulk of the spices are still imported raw from India and Guatemala. More spice imports will be needed to meet the growing demand from growing population and incomes. These imports should grow to \$245 million in 1990. The East Asian and Latin American countries are assured the major part of this market. But, because of container shipping, developed countries, including the United States, may be able to supply growing quantities to Saudi supermarkets.

Tea, normally one of the most valuable of a country's high-value product imports, is much less important in Saudi Arabia. This is not because the Saudis are not tea drinkers, but the \$62 million spent on tea imports in 1980 is small compared to other imports. Tea consumption in Saudi Arabia is not as high as in Kuwait or Libya and, because of the wide availability of soft drinks and fruit juices, its consumption is not likely to increase substantially. Tea is, however, still a very important part of the

Saudi diet and its consumption is not likely to decrease. Imports can be expected to increase mainly because of population growth. Imports of 21,000 tons in 1990 are expected. Sri Lanka and India, the world's largest tea exporters, will continue to supply Saudi Arabia with most of its bulk tea, while the United Kingdom will continue shipping large amounts of packaged tea.

Coffee imports by Saudi Arabia are valued at \$55 million. Coffee is an important drink, served mainly as Turkish coffee. A growing amount of instant coffee is being imported as Western style coffee is becoming more popular. Instant and roasted coffee can be expected to increase because of rising incomes. Imports of roasted coffee grew to 13,000 tons in 1982 while instant coffee imports were up to 2,300 tons. A total of 19,200 tons should be imported in 1985, of which 16,000 tons will be roasted coffee. In 1990, 24,000 tons are projected to be imported, 20,000 tons of which is roasted coffee. Ethiopia should continue to be the largest roasted coffee supplier as its varieties are preferred by Saudis. Suppliers of the 1990 \$40-million instant coffee trade cannot be determined at this time.

A number of confectionary products are also imported. These include canned fruit, sugar candy, chocolate, and nuts. Imports of these products in 1980 amounted to \$113 million. Canned fruit accounted for \$36 million of this, while sugar candy and chocolate imports were valued at \$34 million and \$25 million, respectively. Already large, imports should grow rapidly. The Saudis produce little of these goods, although there are some plans to begin local candy bar production using imported ingredients. Demand for these products is soaring. Sugar candy (including gum) is widely consumed, chocolate is a favorite sweet, and nuts are popular with tea. Imports of these items were estimated at \$150 million in 1982 and are projected at \$300 million by 1990. There will continue to be a large number of suppliers for these goods; but the United States has a good chance of capturing part of the market since it can supply high-quality products at reasonable prices.

## United Arab Emirates

The UAE has the highest per capita level of high-value agricultural product imports in the world at over \$450 per year. It has also had the fastest growth in imports, with an annual compound rate of nearly 55 percent. Imports of these items were valued at more than \$400 million in 1980. UAE imports of high-value products total more than those of Iran, Iraq, or other countries such as Taiwan, Korea, Turkey, and Egypt.

Two factors are responsible. First, processed foods and fresh fruits and vegetables have become an important part of the diet and are very popular. Second, many of the products are reexported. Many of the small villages along the coasts of Iran and Saudi Arabia are better served by small dhows out of UAE ports than they are by the overland distribution of their own countries. Imports of high-value

agricultural products should rise substantially since the UAE market is not yet saturated with these products, its population is expected to more than double by 1990, and the transit trade will continue.

Cigarettes dominate the agricultural imports of the UAE, in large part because of its transit trade. The 1980 value of cigarette imports was almost double that of fresh fruit, the next closest. A large number of cigarettes are transshipped to Iran and Iraq. Iran's suspension of direct cigarette imports from the United States in 1979 caused cigarette imports to the UAE to almost triple as the latter became the major supplier of the Iranian market. In 1980 and 1981, however, this trade slackened somewhat as Iran again made direct purchases of cigarettes. Cigarette trade fell to \$70 million in 1982 as transit trade with Iran continued to decline (table 38). The rising population of the UAE will begin to offset this loss. Imports should rebound to \$75 million by 1985 and grow to \$100 million by 1990. The UAE prefers American cigarettes, and the U.S. share should remain at nearly 75 percent, with the EC supplying most of the rest.

UAE imports of fresh fruit are also large, with over \$47 million of oranges, apples, bananas, and mangoes in 1980. If all this fruit were consumed locally, the per capita intake in the UAE would be much more than double U.S. consumption. But much of the fruit is transshipped to Iran—about 10,000 tons of citrus and 12,000 tons of other fresh fruit in 1980. This trade began long before the Islamic revolution in Iran. It should regain ground lost during the Islamic revolution and imports should continue to grow as population grows.

Banana imports have traditionally been the most valuable and largest in quantity. Although banana imports fell somewhat in 1980, they rebounded to 38,000 tons in 1982 as trade with Iran improved. Banana imports should reach 60,000 tons in 1990, due mainly to population growth. Orange imports are expected to grow slightly faster, with imports estimated at 33,000 tons in 1982 and projected at 60,000 tons in 1990. Apples, the other major fruit import, were estimated at 25,000 tons in 1982 and are projected at 45,000 tons in 1990. Because of their locations, African countries and Australia will likely supply most of the oranges unless Middle East suppliers (Lebanon, Jordan, and Egypt) substantially increase their output. Bananas will come mainly from the Philippines because of location and the large number of Filipinos in the UAE. Apples will be supplied by the United States, the EC, or a South American country, depending on the season. Imports of fresh fruits should amount to \$75 million in 1990.

Another UAE high-value import is beverages, mostly alcoholic. The UAE has one of the most relaxed import policies for alcoholic beverages in the Middle East. As a result, these goods are imported into the UAE to be transshipped, often illicitly. Imports were up to \$50 million in 1982 and will reach \$95 million in 1990. These projections assume no outburst of Islamic fundamentalism which could quickly terminate such imports. The EC, the world's largest ex-

porter of alcoholic beverages, will continue to supply most of the market because of the good selection of high-quality products. But continued stiff competition from Singapore can also be expected. The United States has made only minor inroads into the market, but many American beverages are popular in the Middle East.

Tea, the most popular drink in the Middle East, is also supplied to many areas through UAE ports. Thus, the UAE's imports are much higher than those accounted for by local consumption. These imports were valued at nearly \$30 million in 1980 and amounted to over 12,000 tons. Over half of these imports are transshipped, leaving the UAE with enough tea to maintain one of the world's highest consumption rates. Per capita consumption of tea is likely to drop because of the growing consumption of other beverages, mainly soft drinks and fruit juices. The transit trade is not likely to grow. Growth in imports will result from population growth, but at a slower rate because of declining per capita consumption. Imports were only 13,600 tons in 1982 and will reach 19,000 tons in 1990. Bulk tea will probably continue to be imported mainly from India and Sri Lanka, because of their location. Packaged tea from Britain is also popular and will continue to be imported as well.

UAE traders have reexported margarine and shortening in addition to the vegetable oils mentioned in the previous chapter. Most of the imports are of shortening which, because of the severe shortage of cooking oil in Iran, more than doubled in 1980 to more than 34,000 tons. This level was actually more than total vegetable oil imports of the UAE. Because of the continuing shortage of cooking oil in Iran, and that country's distribution problems, transshipments of shortening from the UAE are likely to remain large, keeping UAE imports high. These imports were estimated at about 30,000 tons in 1982. A slowing of the transit trade will bring 1985 imports down to about 25,000 tons. Imports of 33,000 tons in 1990 will be due to population growth. Singapore and Malaysia, because of their low prices and convenient location, should continue supplying most of this, although the United States, with competitive prices, could make sales there as well.

Fresh vegetable imports by the UAE in 1980 were valued at about \$26 million, about the same amount as shortening imports. But, most imported fresh vegetables are consumed within the UAE rather than reexported. Onions are the main vegetable import, followed by tomatoes and pulses. UAE vegetable production uses the latest available technology, but is still seasonal. Demand for fresh produce is not seasonal, however, and imports are increasing due to rising incomes and growing population. More adequate supplies will lead to higher per capita consumption. Imports are projected at \$65 million in 1990. Most will be supplied by neighboring countries because of short transit times.

The UAE also imports vegetable preparations to supplement the fresh vegetable supply. These imports in 1980 consisted largely of canned tomato paste. In addition to



11,000 tons of tomato paste imported, 20,000 tons of canned vegetables of different types were imported. Olives, pickles, and soups were also imported. These products are now an accepted part of the diet and more variety is being demanded. Imports are projected at \$76 million in 1990. Because of the wide variety of high-quality products available and increased container shipping, the United States could capture a large part of this market. But, there will be stiff competition from the EC and China, the current large suppliers.

Sugar is one of the most expensive imports in most of the Middle East countries. UAE imports, however, in 1980 were valued at \$24 million even though world sugar prices were relatively high. UAE per capita sugar consumption is quite high at over 50 kg, but imports will continue to grow because of population growth and increased bottling of soft drinks. These imports grew to 50,000 tons in 1982, partially in response to recent low sugar prices. Imports should reach 93,000 tons in 1990. All UAE sugar imports are of refined sugar. The EC will remain the largest sup-

Table 38—UAE: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	<i>1,000 tons</i>			<i>Coefficient</i>			<i>Kg/yr</i>	
Citrus:								
Production	10.0	10.0	10.0	12.0	12.0	na	na	na
Imports	22.0	25.0	33.0	40.0	60.0	1.4	na	na
Consumption	32.0	35.0	43.0	52.0	72.0	na	30.2 <sup>2</sup>	34.4 <sup>2</sup>
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	2.7	3.2	3.6	4.2	5.5	1.3	na	na
Consumption	2.7	3.2	3.6	4.2	5.5	na	3.8	3.0
Fresh fruit: <sup>1</sup>								
Production	3.0	3.0	4.0	5.0	6.0	na	na	na
Imports	52.0	55.0	63.0	80.0	105.0	1.6	na	na
Consumption	55.0	58.0	67.0	85.0	111.0	na	52.9 <sup>2</sup>	52.8 <sup>2</sup>
Shortening:								
Production	—	—	—	—	—	na	na	na
Imports	5.0	34.0	30.0	25.0	33.0	NA	na	na
Consumption	5.0	34.0	30.0	25.0	33.0	na	16.5 <sup>2</sup>	13.9 <sup>2</sup>
Sugar:								
Production	—	—	—	—	—	na	na	na
Imports	38.0	44.0	50.0	64.0	93.0	1.7	na	na
Consumption	38.0	44.0	50.0	64.0	93.0	na	51.8	51.7
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	9.5	12.4	13.6	16.0	19.00	1.3	na	na
Consumption	9.5	12.4	13.6	16.0	19.00	na	7.1 <sup>2</sup>	6.7 <sup>2</sup>
<i>Million dollars</i>								
Bakery product imports	4.8	9.3	10.0	12.0	15.0	1.6	na	na
Beverage imports	24.0	35.0	50.0	65.0	95.0	1.4	na	na
Chocolate imports	4.5	7.2	9.0	11.0	15.0	NA	na	na
Fresh vegetable imports	10.0	26.0	35.0	49.0	65.0	1.5	na	na
Fruit juice imports	3.4	12.8	20.0	28.0	34.0	NA	na	na
Fruit preparations imports	3.1	7.0	10.0	13.0	20.0	NA	na	na
Nut imports	1.6	8.8	14.0	18.0	25.0	NA	na	na
Spice imports	13.0	13.0	16.0	18.0	25.0	1.3	na	na
Sugar preparations imports	5.0	13.4	15.0	18.0	22.0	NA	na	na
Tobacco and products imports	35.0	82.0	70.0	75.0	100.0	1.9	na	na
Vegetable preparations imports	12.0	24.0	40.0	54.0	76.0	1.8	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

<sup>2</sup>Excludes transshipments.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



plier if it continues to export refined sugar at very low prices.

Sugar candy and chocolate, widely consumed in the UAE, reached an import level of more than \$20 million in 1980. Most of these imports are sold by street vendors, but some go to transshippers or are purchased as gifts by foreign workers returning home. Consumption should increase. Transshipments should remain steady, or possibly increase, since most go to Iran which does not import much candy directly. In 1990, \$22 million worth of sugar candy and \$15 million of chocolate should be imported. The United States has potential in this market because of the wide variety of products it can provide. Stiff competition from the EC and South Korea can be expected.

UAE imports of coffee amounted to nearly \$14 million in 1980. Coffee has always been popular, but increasing amounts of Western-style coffee are being consumed as well as the traditional Turkish coffee. The UAE imports about as much coffee on a per capita basis as does the United States. But, because of rapid population growth, UAE imports will continue to grow. Imports are projected at 5,500 tons in 1990. About 10 percent of the volume of coffee imported was instant coffee in 1980. This portion should grow to about 25 percent in 1990, thus accounting for imports growing more slowly than population. Asian and African countries are expected to provide most of the roasted coffee, while the United States and the EC will supply the instant variety.

Spice imports are about equal in value to coffee imports. The UAE imports a variety of spices mainly sold in spice shops. Cardamom is the major spice import, with large amounts of saffron and cassia also imported. Growth in spice imports will be related to both population growth and the higher sophistication of the inhabitants. In 1990, imports will be \$25 million. Most will be supplied by a variety of countries, but there are opportunities for the United States to provide packaged spices for this growing market.

Fruit juices, although not a major UAE import, are a growing import item. Imports in 1980 were up nearly 50 percent over 1979. Japan and Taiwan have offered attractive prices on their fruit juices. Most imported fruit juice is either ready to drink or concentrated in consumer-ready cans. Plans call for much larger amounts of bulk concentrate to be imported. Imports will rise to \$34 million in 1990. The United States is presently very competitive with Japan and Taiwan and could dominate a concentrate market.

Smaller amounts of bakery products, confectionary nuts, and canned fruit are also imported. These contributed another \$25 million to the 1980 UAE food import bill. Demand for bakery products is booming, but expansion of local output will dampen growth in imports to \$10 million in 1982 and \$15 million in 1990. Rising demand for nuts and canned fruits will not be supplied locally, however, so imports of these items should increase rapidly. In 1982, \$14 million of nut imports were estimated (to rise to \$25

million in 1990), while 1982 canned fruit imports were valued at \$10 million (to rise to \$20 million in 1990).

## **Qatar**

Qatar's imports of high-value agricultural products reached nearly \$100 million in 1980. With per capita import rates at well over \$300 and little transshipment trade, these products constitute a very large part of the Qatari diet. Incomes are very high in Qatar and many foreign workers have neither the facilities nor time for cooking; foods that require little preparation are popular. These foods are mostly imported by small traders and distributed through small shops rather than the supermarkets common in Saudi Arabia and Kuwait. The Government does little to directly encourage these imports, but does not hinder them with duties, quotas, or other restrictions. With its booming population and rising consumption levels, Qatar will substantially increase its imports of high-value agricultural products.

Nearly \$16 million worth of vegetable preparations were imported in 1980, over 50 percent more than the next largest import, fresh vegetables (table 39). Canned vegetables are very popular in Qatar because of their convenience and variety. Canned tomato paste is the largest single item imported, with large amounts of assorted other vegetables and canned soups also imported. Canned vegetables are now an ingrained part of the Qatari diet, and imports are expected to grow with the population. Imports will rise to \$38 million in 1990. Most traders in Qatar are concerned with the price rather than the quality of the producers, so many of these imports will be supplied by small exporters such as China, Malaysia, India, and Syria, as well as better known exporters.

Canned vegetables are not the sole source of vegetable consumption; year-round fresh produce is also available. Qatar has a highly advanced vegetable production sector, but production is seasonal. Fresh vegetables must be imported during the winter and summer when temperatures are too extreme for production. Fresh vegetable consumption has not been saturated; rising incomes will continue to spur demand and thus the need for imports, projected at \$25 million in 1990. Pulses, a major part of these imports, should be supplied by India, a nearby important pulse producer, while Lebanon, Jordan, and Turkey are likely to supply the other products because of their location and export orientation.

Bananas, apples, and oranges are popular in Qatar, with a high 51-kg per capita consumption rate. Because of the rapidly growing population, imports should continue to grow. Imports will be worth \$23 million in 1990. Bananas, supplied largely by the Philippines, will continue to be the major fresh fruit import, while Lebanon and Jordan will continue to supply sizable amounts of apples and citrus.

Qatar spent almost \$10 million on cigarettes in 1980. These imports were down sharply from the 1979 level of \$16 mil-

lion, but still well above the 1978 imports of \$4.8 million. The 1978-79 tripling of imports resulted from Qatar's transshipments which boomed because of Iran's suspension of cigarette imports. Qatar's role in the trade declined considerably in 1980. Imports in 1982 declined even further to \$8 million as Qatar withdrew from the transit trade altogether. Because of increased population and rising incidence of females smoking, imports should be valued at \$17 million in 1990. The EC has in all but 1 year been the major supplier of cigarettes to Qatar. But, stronger sales efforts by U.S. manufacturers could alter this pattern.

Refined sugar is another important import, valued at \$10 million in 1980. Nearly 14,000 tons of sugar were imported in 1980; per capita consumption in Qatar rose to 52 kg. Part of the imported sugar is used by Qatar's two soft drink bottling plants; planned expansion of this industry plus population growth and increased per capita use will further increase sugar use. These imports are projected to increase to 30,000 tons in 1990, allowing per capita consumption of 60 kg. These will be supplied largely by the EC, although China is presently the largest supplier.

Imports of spices constitute another major Qatari expenditure. Cardamom is the major item. A wider variety of spices will be imported as higher incomes lead to more sophistication in tastes; traditional spice imports will also grow. Imports are projected at \$20 million in 1990. Most spice imports will continue to come from a variety of Asian and Latin American countries, since most are distributed unpackaged by small specialty merchants rather than via consumer-ready containers at supermarkets.

Qatar's beverage imports grew substantially over the seventies, exceeding \$7 million in 1980. Most have been of bottled water and soft drinks, although about 25 percent of the expenditures were for alcoholic beverages. Imports are projected to continue growing rapidly, even with the expected expansion in the local bottling industry. Local bottling will continue to be limited to only a few brands while the population demands variety. The Government helps the bottling industry, but does not protect it. Per capita consumption and population growth will lead to demand growing faster than supply. Imports will reach \$20 million in 1990. The EC and Japan, major world exporters, are likely to continue supplying most of this.

Table 39—Qatar: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	0.38	0.28	0.42	0.63	0.85	NA	na	na
Consumption	.38	.28	.42	.63	.85	na	1.0	1.7
Sugar:								
Production	—	—	—	—	—	na	na	na
Imports	12.30	14.00	15.00	22.00	30.00	1.5	na	na
Consumption	12.30	14.00	15.00	22.00	30.00	na	51.9	60.0
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	1.00	1.50	2.30	3.00	4.50	na	na	na
Consumption	1.00	1.50	2.30	3.00	4.50	na	5.6	9.0
	Million dollars							
Bakery product imports	1.50	2.00	3.00	4.00	7.00	NA	na	na
Beverage imports	3.10	7.10	12.00	15.00	20.00	NA	na	na
Chocolate imports	.70	1.10	1.50	2.00	3.00	NA	na	na
Fresh fruit imports <sup>1</sup>	8.00	9.80	12.00	15.00	23.00	1.7	na	na
Fresh vegetable imports	8.00	9.60	14.00	17.00	25.00	1.6	na	na
Fruit juice imports	1.30	2.50	5.00	8.00	10.00	NA	na	na
Fruit preparations imports	1.40	2.10	2.50	3.00	4.00	NA	na	na
Spice imports	6.20	8.10	11.00	15.00	20.00	1.4	na	na
Sugar preparations imports	2.00	2.70	5.00	8.00	14.00	NA	na	na
Tobacco and products imports	4.80	9.70	8.00	11.00	17.00	1.6	na	na
Vegetable preparations imports	10.00	16.00	22.00	30.00	38.00	1.6	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Includes citrus.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



Tea is Qatar's other large high-value product import with 1980 purchases valued at \$6 million. Tea is very popular among all the different ethnic groups in Qatar, with per capita consumption of almost 6 kg. Per capita consumption of tea is expected to rise substantially to 9 kg in 1990 as higher incomes allow even greater consumption of this popular drink. Imports should rise to 4,500 tons in 1990 to meet this rising demand. India is expected to be the largest supplier, but growing imports of packaged tea are also expected, supplied largely by the EC.

Qatar also imports smaller amounts of most other high-value agricultural products. In 1980, sugar candy, fruit juices, dried fruits, canned fruits, bakery products, coffee, and chocolate were all imported, amounting to about \$2 million. Imports of these products will increase rapidly as processed foods form an even more important part of the Qatari diet.

## Kuwait

Kuwait is a sizable importer of a wide range of high-value products. Canned goods, fresh fruit and vegetables, and even frozen pizzas are available in Kuwaiti stores. Most importing is conducted by either the Kuwait Supply Company or the semi-official Union of Cooperative Stores; very little is done privately. All of the trade is handled by private traders in Saudi Arabia and the UAE. Neither quality nor quantity of products imported into Kuwait has suffered as a result of Government involvement; imports were valued at \$485 million in 1980, nearly a \$400-million increase over 1970 levels. This type of growth is expected to continue since processed foods are becoming a more important part of the Kuwaiti diet.

Some of Kuwait's imports are transshipped. Shipments of imported goods have long been made to Saudi Arabia, Iran, and Iraq. Although the trade with Saudi Arabia has declined in recent years, the war between Iran and Iraq has caused increases in that trade. One of the main items transshipped by Kuwait is cigarettes. In 1979, the year Iran first moved to curtail direct U.S. cigarette imports, Kuwait's imports rose by 20 percent and then by another 20 percent in 1980 to \$73 million (table 40). Kuwaitis are heavy smokers, but some of these imports are destined for Iran.

Growth of cigarette imports will depend on a number of factors. The large projected increases in population will keep demand growing; rising incomes among the lower income groups will increase per capita consumption. The main determinant, however, will be the transit trade. The transit trade to Iran should remain constant over at least the next few years, while the small-lot sales to foreign workers returning home increase. Imports will be \$100 million in 1990. American cigarettes are likely to remain favored, but the EC can also expect to make large sales.

Kuwait's imports of fresh fruit, although not significantly transshipped, are about equal in value to its tobacco product imports. Kuwait imports a wide variety of fruits. Per

capita consumption of fresh fruit in Kuwait is the highest of all the study countries, even substantially greater than consumption in the United States. Much of the citrus imported by Kuwait is used to make fresh-squeezed orange juice while most orange juice in the United States is made from concentrate, accounting for Kuwait's unusually high consumption rate. Citrus is Kuwait's largest fresh fruit import with over 50,000 tons, valued at \$24 million, imported in 1980. Watermelon is its second largest import, coming mainly from Saudi Arabia; per capita consumption of watermelon in 1980 was 32 kg. Large amounts of apples and bananas are imported, as well as grapes, dates, and stone fruit.

This diversity in imports will continue, although population growth rather than increases in per capita consumption will be the main import factor. Watermelons are projected to be the fastest growing fresh fruit import, from 55,000 tons in 1982 to 100,000 tons in 1990. Citrus imports are expected to rise from 60,000 tons in 1982 to 80,000 tons in 1990. Banana imports should rise from 29,000 tons in 1982 to 45,000 tons in 1990. Bananas are consumed in large quantities by the numerous Filipinos in the country as well as by the Kuwaitis and other Arabs. Apples will be the other major fruit import, with imports of 35,000 tons in 1990. The fruits will be supplied by a number of suppliers: the watermelons by Saudi Arabia; the citrus by Gaza, Lebanon, and Jordan; the bananas by the Philippines; and the apples by the EC, the United States, and Chile.

Fresh vegetable imports cost Kuwait nearly \$60 million in 1980. The Kuwaiti diet is at the stage where abundant high-quality produce is expected year round. Kuwait does have some production, but like the other Gulf countries, this production is seasonal. Increasing amounts of tomatoes, onions, potatoes, and pulses, as well as other vegetables, have been imported to meet year-round demand. These imports are expected to grow substantially to \$100 million in 1990. Most will be supplied by regional sources such as Lebanon, Jordan, India, Turkey, and Egypt. Pulses, onions, and potatoes can be shipped longer distances and present opportunities for the United States.

Spice imports by Kuwait have remained steady in recent years, but they constitute a major expenditure at \$48 million in 1982. Cardamom imports account for nearly half of total spice imports, but a large variety of other spices are also imported. Import growth will depend mainly on population growth, although a shift to more prepackaged spice will probably increase the value of imports. Value of these imports is projected to rise to \$65 million in 1990, with most supplies coming from South Asia.

Sugar imports, valued at \$36 million in 1980, are relatively small compared to overall imports, but they allow a per capita consumption of nearly 37 kg. This rate is far less than the U.S. per capita consumption of over 60 kg. Kuwaiti consumption is expected to expand significantly due to an expansion in soft drink bottling and pastry baking. Imports should reach 120,000 tons in 1990. The Kuwaitis



have shown no interest in refining raw sugar imports. The refined product will be supplied largely by the EC.

Kuwait's imports of vegetable preparations are used to supplement fresh produce and to provide a convenient alternative to preparing vegetables. Canned tomato paste is the major import, but numerous other types of canned vegetables are also imported. The year-round abundance of fresh vegetables has somewhat limited Kuwait's imports of vegetable preparations. But their convenience will contribute to increases in imports at a rate about equivalent to the population growth rate. Imports should grow to \$70 million in 1990. Tomato paste, dominating these imports, will be supplied by Italy, Greece, and the United States.

Kuwait imports \$24 million worth of chocolate and \$20 million of sugar candy. Much of it is transshipped. These shipments are often in the form of gifts taken home by foreign workers or by weekend shoppers from Iraq rather than actually being sold by traders. Candies are also very popular among Kuwaitis. Imports will continue to grow as higher incomes allow more consumption and the population continues to expand. Trade with Iraq is also likely to continue since Iraq is not expected to begin importing directly large amounts of candy. Sugar candy imports are expected to grow more rapidly than chocolate imports because the Kuwaitis are constructing their own chocolate factory. Sugar candy imports should reach \$47 million in 1990, while chocolate imports grow to \$41 million. The United States is a large supplier of these products and

Table 40—Kuwait: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Citrus:								
Production	—	—	—	—	—	na	na	na
Imports	40.0	51.0	60.0	64.0	80.0	1.0	na	na
Consumption	40.0	51.0	60.0	64.0	80.0	na	37.7	37.6
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	2.2	.9	2.4	3.0	3.7	1.3	na	na
Consumption	2.2	.9	2.4	3.0	3.7	na	.7	1.7
Fresh fruit: <sup>1</sup>								
Production	—	—	—	—	—	na	na	na
Imports	94.0	116.0	106.0	143.0	180.0	.8	na	na
Consumption	94.0	116.0	106.0	143.0	180.0	na	85.6	84.5
Sugar:								
Production	—	—	—	—	—	na	na	na
Imports	41.0	50.0	70.0	90.0	120.0	1.4	na	na
Consumption	41.0	50.0	70.0	90.0	120.0	na	36.9	56.3
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	7.0	8.0	9.0	10.0	11.0	.9	na	na
Consumption	7.0	8.0	9.0	10.0	11.0	na	5.9	5.2
	Million dollars							
Bakery product imports	13.0	13.0	15.0	18.0	20.0	.9	na	na
Beverage imports	17.0	17.0	12.0	10.0	8.0	NA	na	na
Chocolate imports	18.0	24.0	27.0	34.0	41.0	NA	na	na
Fresh vegetable imports	46.0	58.0	70.0	85.0	100.0	1.5	na	na
Fruit juice imports	7.5	12.0	13.0	17.0	22.0	1.5	na	na
Spice imports	43.0	41.0	48.0	55.0	65.0	1.0	na	na
Sugar preparations imports	14.0	20.0	30.0	40.0	47.0	NA	na	na
Tobacco and products imports	50.0	73.0	78.0	84.0	100.0	1.7	na	na
Vegetable preparations imports	26.0	33.0	40.0	55.0	70.0	1.7	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production, 1972-81*, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.

could increase its share; but very stiff competition from the EC and Korea can be expected.

Kuwait also spends a substantial amount on tea, coffee, fruit juice, and soft drink imports. Imports of these items totaled \$63 million in 1980. Tea, the major beverage in Kuwait, was the largest import in 1980 with nearly 8,000 tons valued at \$23 million. Soft drink imports totaled \$17 million, while fruit juice and coffee imports were valued at \$12 million and \$11 million, respectively. These imports grew substantially during the seventies, and, with the exception of soft drinks, they should see further growth.

Tea consumption is among the world's highest at over 6 kg per capita, the saturation level. Growth will depend mainly on population growth. Tea consumption may decline somewhat because of increasing availability of other drinks. Imports of 11,000 tons are projected in 1990. Most will be supplied bulk out of Sri Lanka and India, but some processed tea will likely be shipped by the EC and possibly the United States.

Coffee is consumed in much smaller quantities than is tea. Not much more than 2,000 tons have been imported in recent years. Coffee is expensive relative to other drinks, and this has dampened demand. This factor should continue to affect imports. Imports are projected to increase only slightly from 2,400 tons in 1982 to 3,700 tons by 1990. Coffee values will increase somewhat faster, however, as higher valued instant coffee should gain a growing import share, reaching about 25 percent of coffee imports in 1990. India will likely continue to supply most of the small amounts of bulk coffee, while the EC or the United States will supply the instant form.

Fruit juices are becoming much more popular in Kuwait and are partially responsible for the lack of growth in tea and coffee imports. Fruit juices are mainly imported in reconstituted form, but Kuwait plans to shift to importing bulk concentrates for local packaging or reconstitution. Imports of fruit juices grew to \$13 million in 1982 with sizable concentrate imports. In 1990, when most of the imports will be concentrates, the value should reach \$22 million. A very large portion of this could be supplied by the United States, with Brazil being the major competitor.

Of the major beverage imports, only soft drink imports are expected to fall. Most of the growing demand will be met by locally bottled drinks. Kuwait has been rapidly expanding its bottling capability. By 1990, only small specialty soft drinks will be imported. Imports declined to \$12 million in 1982, and will decline further to \$8 million in 1990. The small amounts will probably be supplied by the EC and Japan.

Kuwait imports a number of other high-value agricultural products. These include bakery products, confectionary nuts, margarine, canned fruit, and peanut butter. Growth in these imports should be substantial as they are sold on a wider scale in supermarkets. The Government shows no interest in limiting any of these imports.

## Iraq

Iraq is the second largest regional importer of high-value agricultural products. Such imports were valued at \$740 million in 1980. Iraq, however, imports significant amounts of only a few high-value products. Sugar, tobacco products, and tea imports dominate Iraq's trade. But postwar improvements in transport and the Government goal to upgrade diets should spur imports of many other high-value agricultural products.

Sugar imports accounted for half the value of these imports in 1980. Iraq produces only about 30,000 to 45,000 tons annually; it imported over 1 million tons in 1982 (table 41). Iraq is the only study country other than Algeria that imports substantial quantities of raw sugar, usually around 75 percent of the total sugar imports. Imports and domestic production provide enough sugar for a relatively high per capita level of consumption, currently about 55 kg. But, since no other sweeteners are used, there is potential for further expansion in per capita consumption. Part of this expansion will result from growth in the soft drink industry, a major user of sugar. Also, a general increase in incomes and population will also influence sugar imports. These imports in 1982 were in part encouraged by low world sugar prices. Imports should grow to 1.2 million tons in 1990. Influenced by the war with Iran, imports of refined sugar will dominate the market early in the decade, coming largely from the EC. Raw sugar will again dominate imports later in the decade, supplied mainly by Cuba, Brazil, and the Philippines.

Tobacco imports, amounting to \$85 million in 1980, were mainly cigarettes, although Iraq also imports large quantities of unmanufactured tobacco. Smoking has been on the rise in Iraq, and cigarette imports have been growing substantially as the Government seeks to alleviate shortages. The increased supplies have been only partially successful in doing this because of the tremendous pent-up demand. The Government is expected to continue its program; imports could grow at an even faster rate during the decade. Imports in 1982 reached a value of \$100 million, most of which was for cigarettes. Although unmanufactured tobacco imports are expected to remain constant over the remainder of the decade, increases in cigarette imports could push the total value of tobacco imports up to \$180 million in 1990. The British are likely to continue supplying the bulk of these cigarettes. American brands could be popular if the Government can be persuaded to allow their importation.

Iraq's imports of other high-value agricultural products, much smaller than these, should grow substantially. Imports of many beverages are expected to grow rapidly, especially tea, soft drinks, and fruit juices. In 1980, 25,000 tons of tea valued at \$58 million were imported, but this amount allowed per capita consumption of less than 2 kg, a small amount of the national drink. This low consumption level should increase by about 50 percent over the decade, held down only by increasing soft drink consumption. Imports are projected at 63,000 tons in 1990. These

imports, almost entirely bulk, will be supplied mainly by the South Asian tea exporters.

Soft drink consumption in Iraq is growing; but, because of limited supplies, use is still not widespread or high. Iraq has a small bottling industry. But, even with planned bottling expansion in the eighties, demand for soft drinks is expected to far outdistance domestically produced supplies. Imports are expected to continue to grow rapidly, from the \$40 million recorded in 1982 to \$70 million in 1990. The EC can be expected to supply most of these drinks, many with U.S. brand names. Japan is another potential supplier, perhaps using barter arrangements.

Fruit juice imports are currently small; only \$2 million worth were imported in 1982. Substantial growth is possible since there is a shortage of drinks in Iraq, especially

high-quality cold drinks. Most of the growth will occur late in the decade, in part because of current difficulties in transporting chilled or frozen products. Imports should reach \$40 million in 1990. This is a large potential market for the United States as well as for Brazil, the world's other large frozen fruit juice concentrate exporter.

Iraq's imports of fresh fruit and vegetables have also been growing rapidly. Most growth will be in apple imports, the dominant fruit import. Because apples are easily supplied by land from Eastern Europe and Turkey, they far surpass the small imports of bananas or citrus which are not expected to grow. Apple imports are projected to reach 125,000 tons by 1990, up from the 1980 level of 30,000 tons.

Fresh vegetable imports should also grow substantially, but not as fast as apples. Pulses and potatoes are the

Table 41—Iraq: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons						Kg/yr	
Citrus:								
Production	189.0	193.0	207.0	239.0	291.0	na	na	na
Imports	1.0	.5	.4	.5	.7	NA	na	na
Consumption	190.0	193.5	207.4	239.5	291.7	na	14.4	13.8
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	.3	.3	.3	.3	.3	NA	na	na
Consumption	.3	.3	.3	.3	.3	na	—	—
Fresh fruit: <sup>1</sup>								
Production	614.0	623.0	660.0	720.0	944.0	na	na	na
Imports	29.0	42.0	50.0	75.0	125.0	2.0	na	na
Consumption	643.0	665.0	710.0	795.0	1,069.0	na	49.3	50.6
Sugar:								
Production	33.0	40.0	45.0	57.0	80.0	na	na	na
Imports	415.0	705.0	1,000.0	1,000.0	1,200.0	1.7	na	na
Consumption	448.0	745.0	1,045.0	1,057.0	1,280.0	na	55.3	60.6
Tea:								
Production	—	—	—	—	—	na	na	na
Imports	26.0	25.0	38.0	47.0	63.0	1.5	na	na
Consumption	26.0	25.0	38.0	47.0	63.0	na	1.9	3.0
	Million dollars							
Beverage imports	12.0	25.0	40.0	55.0	70.0	NA	na	na
Chocolate imports	.7	.9	2.0	5.0	6.0	NA	na	na
Fresh vegetable imports	5.0	16.0	25.0	33.0	40.0	1.7	na	na
Fruit juice imports	.1	1.0	2.0	15.0	40.0	NA	na	na
Fruit preparations imports	.8	1.0	5.0	15.0	25.0	NA	na	na
Nut imports	.1	5.0	10.0	15.0	25.0	NA	na	na
Tobacco and products imports	13.0	85.0	100.0	140.0	180.0	1.9	na	na
Vegetable preparations imports	5.0	20.0	50.0	70.0	100.0	NA	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production*, 1972-81, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.



main imports, although Jordan also provides a large variety of fresh produce. Fresh vegetables are not as widely available in Iraq on a year-round basis as they are in Saudi Arabia or the Gulf countries, so there is great potential demand. But government restrictions and some expected increase in local output will somewhat dampen imports. These imports will reach \$40 million in 1990. The United States could supply some of Iraq's pulse requirements, although Turkey is likely to continue dominating the trade because of its favorable location. Lebanon and Jordan are expected to supply most of the other produce.

Canned fruits and vegetables are the other commodities whose trade has been small but is entering a boom. Iraq's imports of canned vegetables increased to \$20 million in 1980, up from \$3 million in 1979. In large part because of the war with Iran, Iraq's 1982 imports of canned vegetables, mainly tomato paste, were valued at \$50 million. The military has had large requirements and inexpensive supplies have flooded most markets. Low-priced available supplies in Turkey and Bulgaria have also helped the growth. This is not a one-time purchase, however, as imports are projected to be \$100 million in 1990, still supplied largely by Turkey and East Europe.

Canned fruit imports, valued at only \$1 million in 1980, are also expected to grow, but not nearly as much as canned vegetables. Main suppliers will be Eastern Europe and Turkey. Imports should increase from \$5 million in 1982 to \$25 million in 1990.

## Iran

Iran imports a large amount of a few high-value agricultural products. Iran is not likely to become a large importer of a wide variety of goods. Its own domestic production is too great and its Government too austere for imports of expensive consumer-ready food such as cookies or frozen orange juice. There is no longer a large foreign community in Iran which has been responsible for a large part of these imports. The value of Iran's few high-value imports is expected to increase substantially over its 1980 level of \$660 million.

Imports of refined sugar accounted for nearly 65 percent of the value of Iran's imports of high-value agricultural products in 1980. Valued at \$420 million, these imports were Iran's largest single agricultural import, worth more than even wheat imports. Iran produces large amounts of sugar. But this production has been declining rapidly; since 1978, more than half the sugar in Iran has been imported. Sugar is important in the Iranian diet; even though production is expected to recoup, imports are expected to continue growing.

Growth in sugar demand will result from both population increases and a substantial rise in per capita consumption, which was only 37 kg in 1980 (table 42). The austerity of the present Iranian regime has had little effect on sugar imports and imports are growing rapidly in attempts to alleviate shortages. Low world sugar prices encourage

these purchases. Sugar imports are projected to rise to 2.7 million tons in 1990. Imports and local production will allow per capita consumption of 68 kg, near that of the United States. Refined sugar will dominate these imports. The EC will likely be Iran's dominant supplier.

Iran's second largest high-value product import has been tobacco and tobacco products. These imports were valued at \$105 million in 1978. Imports fell to \$25 million in 1979 and further to \$2.6 million in 1980. This was not caused by a widespread antismoking campaign, but rather an anti-American campaign where imports of U.S. cigarettes were banned. Iranians did not have to quit smoking; cigarettes were smuggled from the other Persian Gulf countries, probably more than had been imported directly.

Iran has once again begun to import tobacco and cigarettes directly, although not from the United States. In 1981, \$40 million of tobacco was imported to help revamp the domestic Iranian cigarette industry, along with another \$80 million worth of cigarettes. Imports of tobacco and cigarettes continued to grow in 1982, with leaf tobacco imports valued at \$50 million and direct cigarette imports of \$130 million. Cigarette imports will rise mainly at the expense of the transshipment trade and are intended to end shortages. Imports of tobacco should reach \$75 million by 1985, but grow to only \$80 million in 1990 because of expected increases in local output. Imports of cigarettes, on the other hand, are projected to be valued at \$150 million and \$170 million in those years. Unless Iran's relations with the United States improve, most tobacco will be supplied by African and East European countries. Cigarettes will be shipped from Eastern European countries.

Iran's tea imports are also large and growing. Tea is the most important beverage in Iran, and because of a large population, Iran's tea imports are among the highest in the Middle East. In 1980, 22,000 tons of tea valued at \$84 million were imported. Unlike many of the other study countries, soft drink and fruit juices are not widely available in Iran, nor are they expected to be. Imports should continue growing rapidly as population and per capita consumption increases. Tea imports will reach 37,000 tons in 1990. Almost all of this tea will be imported in bulk, mainly from South Asia.

Fresh fruit imports in the late seventies were also large, but they have suffered badly from restrictions instituted by the new Government. Citrus was Iran's largest fruit import with as much as 73,000 tons imported in 1978. Imports fell to 50,000 tons by 1980. Then, the Government decided to completely ban citrus imports. Although this ban is not fully applied, imports were only 20,000 tons in 1982. They are not expected to regain the 50,000-ton level until 1990. Turkey is likely to supply most of the product because of its overland supply routes, but Gaza and Jordan could again ship citrus if relations in the area improve.

Apples are Iran's other major fruit import. Imports of apples have been affected by the change in governments but not to the extent suffered by citrus. Imports of apples

fell from nearly 40,000 tons in 1978 to 5,000 tons in 1980. The increased land trade with Turkey resulting from the war with Iraq has helped spur apple imports again. Turkey has had abundant supplies of apples for export. The Iranian Government has not been as restrictive toward apple imports as to citrus. Imports rose to 50,000 tons in 1982, an alltime high, and will reach 100,000 tons in 1990. Several Eastern European countries could be large suppliers in addition to Turkey.

Most other highly processed products show little potential for sustained large growth. Iran has its own processing

industry and the needed local supplies of produce, so little growth in canned food imports is expected, with the possible exception of tomato paste. Confectionary products such as chocolate and sugar candies are not likely to be imported directly because of Government import restrictions. Margarine is sometimes imported in large quantities, but this is a function of good deals rather than a steady growth in demand. Some cereal preparations are imported, mainly baby foods, but the \$10 million spent on these in 1980 is trivial considering Iran's large population.

Table 42—Iran: High-value agricultural product production, imports, and consumption

Product	Actual			Projected		Income elasticity of import demand, 1980	Per capita consumption	
	1978	1980	1982	1985	1990		1980	1990
	1,000 tons					Coefficient	Kg/yr	
Citrus:								
Production	103.00	109.00	107.00	113.00	128.00	na	na	na
Imports	73.50	50.00	20.00	30.00	50.00	1.8	na	na
Consumption	176.50	159.00	127.0	143.00	178.00	na	4.3	3.5
Coffee:								
Production	—	—	—	—	—	na	na	na
Imports	.10	.10	.20	.25	.30	NA	na	na
Consumption	.10	.10	.20	.25	.30	na	—	—
Fresh fruit: <sup>1</sup>								
Production	1,468.00	1,493.00	1,570.00	1,710.00	1,935.00	na	na	na
Imports	89.00	5.00	50.00	85.00	100.00	1.8	na	na
Consumption	1,506.00	1,498.00	1,620.00	1,795.00	2,035.00	na	40.1	40.1
Sugar:								
Production	630.00	600.00	700.00	715.00	750.00	na	na	na
Imports	876.00	785.00	1,500.00	2,000.00	2,700.00	2.0	na	na
Consumption	1,506.00	1,385.00	2,200.00	2,715.00	3,450.00	na	37.0	68.0
Tea:								
Production	27.00	29.00	30.00	33.00	40.00	na	na	na
Imports	20.00	22.00	26.00	30.00	37.00	1.5	na	na
Consumption	47.00	51.00	56.00	68.00	90.00	na	1.7	1.8
	Million dollars							
Beverage imports	22.00	1.00	4.00	7.00	10.00	NA	na	na
Fresh vegetable imports	6.50	13.10	20.50	27.00	29.00	NA	na	na
Fruit juice imports	1.20	.50	2.00	3.00	10.00	NA	na	na
Tobacco and products imports	104.50	2.60	180.00	225.00	250.00	2.0	na	na
Vegetable preparations imports	3.90	4.50	10.00	15.00	25.00	NA	na	na

— = Negligible.

NA = Not available.

na = Not applicable.

<sup>1</sup>Other than citrus. Does not include dates.

Sources: Actual production data from U.S. Dept. Agr., Econ. Res. Serv., *World Indices of Agricultural and Food Production*, 1972-81, SB-689, Aug. 1982, and FAO, *Production Yearbook*, various issues. Actual imports data from FAO, *Trade Yearbook*, various issues, and U.N. Trade Data System. Projected production and imports, income elasticity of import demand, and per capita consumption by U.S. Dept. Agr., Econ. Res. Serv.





# Appendix I: Data Sources

Limited availability of current, accurate information is always a major problem for researchers and others dealing with North Africa and the Middle East. This problem is especially acute for the agricultural trade data for the area. Nevertheless, most analysis of trade in the region is undertaken using this information. Much of it is of poor quality.

However, it is not necessary to use official country trade data to study the agricultural import patterns of the eight study countries. Rather, it is possible, and even preferable, to use export data of major agricultural producing countries to obtain estimates of the food imports of the eight. This indirect method of data collection, known as the matrix table method, is discussed in this appendix. Following this discussion is a presentation of the actual import data collected using the matrix table method. These data were collected in groups for grains, livestock products, oilseed products, and high-value agricultural products.

The greatest part of the data needed for this study were commodity import data. They were used in combination with historical data on national income, population, and agricultural production and their projections to make projections of food imports to the study countries. Of the data sets, a time series of the import data is the most difficult to obtain. Import data provided by the importing country are normally used for purposes of analysis, but in the Middle East these data are sparse, especially for recent years and very early years. For instance, Algeria, normally a good reporter, has not reported its trade data since 1978; Iraq has not reported since 1976. Saudi Arabia and the other Gulf countries did very little reporting in the early seventies. Aggravating this problem of missing data is the problem of poor quality of data when reported. Although the quality has improved greatly in recent years, especially in Saudi Arabia, in previous years the quality of data reported was poor, distorting any attempts at analysis.

The problem of poorly reported import data can be overcome, however, by using matrix tables to estimate each country's imports. These estimates are the sum of what exporters report as sending to the importing country. The tabulation of these export data is termed a matrix table. An example of a matrix table is provided in appendix table 1, which shows Algerian wheat imports from 1967 to 1981.

Matrix tables were used extensively in this study, both to provide estimates of imports when no import data were available and also to verify the data reported by the importing country. When summed, the data in a matrix table become a minimum estimate of the amount of commodity

import by a given country. This estimate was often substantially higher than the level of imports reported by the country itself.

An example of the difference between what is reported by the importing country and the exporting country are the rice imports of Kuwait from Thailand. The Kuwaiti trade books for 1976-77 and 1978 report rice imports from Thailand which are much lower than the amount reported as shipped from Thailand (app. table 2). Two factors may account for this difference. First, there is a large duty-free zone at the Kuwait City port. Goods entering this zone are not counted as imports by Kuwaiti customs, and for the most part are transshipped in small quantities to Iran, which also does not count them. It is still necessary to count these transshipments, however, for they increased Kuwait's demand for rice, and they are part of Iran's overall demand. Second, imports are often simply undercounted. Customs in Kuwait and most of the other study countries are not as well organized as in the United States and Western Europe, nor are the trade reporting ministries, so many imports have been left uncounted. This situation is changing rapidly, however.

The data used for constructing matrix tables thus came from a variety of sources. Most of the data were official country export data as translated and standardized by the United Nations Trade Center in Geneva. The Trade Center obtains copies of the official trade publications of nations, standardizes commodity classifications to the Standard International Trade Classification (SITC) codes, converts units to metric tons and values to U.S. dollars, and reports on a calendar year basis. These data are then made available to subscribers on computer tape. In cases where data were not available from the United Nations, official exporter publications were used to obtain needed data. These publications were needed for the Eastern European countries in many years, as well as a number of other countries. Where official publications were not available for various reason, reports made by the agricultural attache service of the U.S. Department of Agriculture provided some of the missing information. Finally, when a study country was known to be receiving goods from another country, but neither reported the actual quantities, estimates of the trade were made by country specialists in the International Economics Division, Economic Research Service.

Once these matrix tables were formulated, they were then verified against the data that a study country actually reported. When available, each supplier's shipments of a given commodity were compared with importer reports

Appendix table 1—Algeria: Matrix table of wheat imports

Year	United States	EC <sup>1</sup>	Canada	Argentina	Others <sup>2</sup>	Total
1,000 tons						
1967	205	69	13	30	90	406
1968	243	330	82	10	88	754
1969	288	110	0	49	7	454
1970	229	3	171	15	47	465
1971	121	1	338	0	109	569
1972	496	0	322	55	253	1,127
1973	553	5	267	49	41	916
1974	799	258	582	16	64	1,718
1975	872	270	281	103	176	1,702
1976	755	138	231	61	10	1,195
1977	610	10	610	228	56	1,513
1978	635	44	340	0	596	1,615
1979	402	155	346	0	37	1,483
1980	255	598	770	0	0	1,623
1981	673	NA	592	0	NA	1,700 <sup>3</sup>

NA = Not available.

<sup>1</sup>Includes only EC9.

<sup>2</sup>Other countries include Greece, Bulgaria, Morocco, Tunisia, Mexico, Pakistan, USSR, Albania, and Sweden.

<sup>3</sup>Preliminary.

Sources: United Nations Trade Data; U.S. Bureau of the Census; Algeria, *Annuaire Statistique du Commerce Extérieur de l'Algérie*; Argentina, *Bolsa de Cereales*; Statistics Canada, *Exports by Commodities*.

Appendix table 2—Kuwait: Rice imports from Thailand

Year	Imports as reported by Kuwait	Imports as reported by Thailand
Tons		
1976	7,215	8,835
1977	2,976	5,371
1978	6,766	8,028

Sources: State of Kuwait, Ministry of Planning, *Yearly Bulletin of Foreign Trade Statistics*, Vol. 2, 1976, 1977, 1978; Thailand, Department of Customs, *Foreign Trade Statistics of Thailand*, 1976, 1977, 1978.

and differences were noted. As a general rule, the series which consistently had the largest numbers was used as the more accurate. Since data in most cases were collected in quantity terms, shipping fees were not a problem. Where only value data were available, fob exports were converted to cif imports using FAO's standard 12 percent. Again, the consistently higher numbers were used in the final matrix table. The larger quantity or value was normally used in the matrix table because it was considered more reliable. Thus, in the example of appendix table 1, the data have been verified against Algeria's official trade statistics.

Many countries, however, which do not generally release their data do report the total value—and often the volume—of their trade by commodity (but not by origin) to FAO which then publishes it in the *FAO Trade Yearbook*. These figures were compared on an annual basis with those commodity totals obtained from matrix tables. When

the importing country reported a greater amount of imports of a commodity than could be found with a matrix table, the importing country's total was used as the total. If, however, the matrix table showed more being shipped to the study country than was reported as received, this matrix table estimate was taken as the real level of imports. Often, however, study countries did not bother to report even to the FAO. In this case, the FAO made estimates of the quantity and value of the country's imports. These estimates were disregarded if they were lower than those from the matrix tables; but, if they were larger, their merits were judged by the country specialists and then either accepted as a better estimate than the matrix table, or rejected.

Numerous problems are associated with matrix tables, however. Many countries, especially African countries, carry on a substantial amount of trade with the OPEC countries. Sudan, Ethiopia, and Somalia all send a substantial number of live sheep and cattle to Saudi Arabia and the Gulf countries, but often fail to report such shipments. Reports of such shipments, when they exist, are subject to the same caveats as to quality as the reports of the OPEC countries. These data can also exhibit great variability, making it difficult to estimate those years when neither country, importer or exporter, reports its trade. Furthermore, South Africa ships large amounts of corn into these countries, which neither side is overly anxious to publicize. Estimates of this trade are also difficult to make, leaving the matrix tables slightly less than perfect.

Shipping and delivery dates posed another problem. If, for example, a shipment of wheat left Australia for Saudi



Arabia in December 1980, it would be added into the matrix table total in 1980 rather than in 1981 when it actually arrived. This produces a tendency to bias 1980 totals upward and 1981 totals downward; but since this shift should occur for each year, the downward bias at the beginning of the year was assumed to be offset by the upward bias at the end of the year, evening out the import figures. If this assumption holds, then the matrix table is easily comparable with official country import data. Even if it is not, however, it is doubtful that any more than a 10-percent error was introduced. Since the difference between the matrix estimates and official country reports was seldom this small, this error (if it existed) was not important.

Matrix table estimates of the agricultural imports of the study countries are estimates. The problems mentioned here have the potential for biasing these estimates, but given the even greater inaccuracies of much of the official trade data available, the matrix table estimates are not that poor, and may well be the best available.

As stated above, the data collected for this study were collected by commodity for each of the eight study countries on an annual basis. The data series began in 1967 and continued through 1981, although most of the quantitative analysis was conducted using data through 1979. The beginning point, 1967, was chosen because it provided a significant number of years before 1974 when incomes of OPEC countries rose so dramatically, and it was in reality easy to collect data that far back since it was the first year that the U.N. trade data series was published. Data for the most part were organized using the SITC codes, although occasionally data were aggregated to make new commodity classifications. In short, however, the data were divided into four major groups: grains, livestock and products, oilseeds and products, and high-value agricultural products.

In the grains group, six commodity subgroups were formed: wheat, wheat flour, rice, barley, corn, and other feed grains (which normally consisted of sorghum and proved important only in Saudi Arabia and Iran). The data collected for the commodities were all on a volume basis. Although it is standard USDA practice to measure wheat flour in terms of wheat equivalent, this conversion was not made in this study.

The livestock group of commodities included everything from the live animal to the cooked, canned meat. Specif-

ically, the commodities in this group were live cattle, live sheep, live poultry, beef and veal, sheepmeat, poultry meat, other fresh and frozen meats, prepared and preserved meats, fresh milk and cream, nonfresh milk (dry and condensed), butter, cheese, and eggs. The live animal data were collected in terms of head. When live animal data were provided only in weight terms, they were converted to units using the FAO conversion factors provided in the publication *Technical Conversion Factors for Agricultural Commodities*. Where this publication did not provide a conversion factor, it was obtained either by using one from a similar country, or by calculating it for a different year. All other data in this group were collected by weight.

The oilseeds category included three types of products: oilseeds, cooking oils, and vegetable oil meals. Data were collected in the oilseeds category for peanuts, soybeans, cottonseed, sunflower seed, sesame seed, and rapeseed. Data for cooking oils such as soybean oil, cottonseed oil, peanut oil, olive oil, sunflowerseed oil, rapeseed oil, palm oil, coconut oil, and corn oil were collected as well. Vegetable oil meals, on the other hand, were collected as a group rather than by their individual type. All these data were collected in volume terms.

The final commodity group, the high-value agricultural products, was the most difficult to accommodate. In this group, the data were collected in volume terms if the product was fairly consistent, such as citrus or sugar. For other products, such as vegetable preparations or bakery products, unit prices varied widely, and it was thus necessary to collect data in value terms. Other products in this group include noncitrus fresh fruit, dried fruit, canned fruit, fruit juice, confectionary nuts, fresh vegetables, pulses, coffee, cocoa, chocolate, tea, spices, cereal preparations, beverages, and tobacco and products. Some combinations of the SITC codes were needed to obtain these groupings, but for the most part they were minor.

This number of commodities, when multiplied by the number of countries in the study, provides for nearly 600 country-commodity combinations. With an average of 10 suppliers for each commodity to a country over a period of 15 years, nearly 100,000 data observations were collected in all for this study.



## Appendix II: Names and Addresses Helpful to U.S. Exporters

The U.S. Department of Agriculture offers several services that can assist U.S. exporters in entering the market or in increasing their sales to the North Africa and Middle East OPEC countries.

The Economic Research Service (ERS) of USDA studies international commodity trade, supply and demand conditions, foreign agricultural production, and trade and price policies. ERS publishes special reports and research papers on these subjects. It also regularly publishes the quarterly *World Agricultural Situation* and the monthly *Foreign Agricultural Trade of the United States*.

The Foreign Agricultural Service (FAS) of USDA provides many kinds of services and publications relating to foreign market development and assistance to U.S. exporters of agricultural and food products. FAS operates 11 agricultural trade offices throughout the world in an expanding program to assist U.S. exporters. The Middle East regional office, located in Bahrain (address below), assists U.S. business people by establishing the necessary government and business contacts, providing leads on potential buyers, arranging appointments, and setting up project displays in Bahrain, Kuwait, UAE, Oman, and Qatar. A new office was opened in Jiddah in March 1983 to provide the same services in Saudi Arabia.

The FAS sales team program arranges for personal visits by U.S. business representatives to foreign buyers. When a market with export potential is identified, FAS arranges for five or six firms handling food products with sales potential in that market to participate in sales missions. USDA makes all necessary arrangements, including travel, appointments, and supply of brochures.

The FAS cooperators' service carries out export development activities in cooperation with more than 60 agricultural trade and producer groups. The service involves holding jointly financed activities such as advertising, merchandising, trade servicing, training, and seminar.

The major FAS publication service is the *Trade Opportunity Referral Service* (TORS). TORS is a specialized direct mail service that alerts food and agricultural export firms to export opportunities for a particular commodity. *Export Briefs* is a weekly trade bulletin covering export opportunities for all food and agricultural commodities. The monthly *Contacts for Farm products* newsletter for overseas distribution introduces U.S. export products to foreign firms.

FAS provides many other services, such as new product testing and sponsoring trade exhibits overseas. U.S. exporters can find out more about these programs by contacting the FAS Export Programs Division (address below).

Some other key addresses for exporters are provided below, many in the countries themselves. For those countries in which food importing is handled by many agencies or private firms, it would be particularly useful for exporters to contact an FAS representative to obtain a full listing and other assistance.

### Addresses

#### U.S. Government

Africa and Middle East Branch  
International Economics Division  
Economic Research Service  
U.S. Department of Agriculture  
500-12th Street, S.W., Room 342  
Washington, D.C. 20250  
Tel. (202) 447-9160

Export Programs Division  
Foreign Agricultural Service  
U.S. Department of Agriculture  
Washington, D.C. 20250

Commerce Action Group for the Near East  
International Trade Administration  
U.S. Department of Commerce  
Washington, D.C. 20230

Agricultural Trade Office  
c/o American Embassy  
Shalkr Isa Road  
P.O. Box 26431  
Manama, Bahrain

Agricultural Trade Office  
c/o American Embassy  
144 Avenue de la Liberté  
Tunis, Tunisia

Agricultural Trade Office  
Al Zouman Commercial Center  
Palestine and Hayel Streets  
Jiddah, Saudi Arabia

**Algeria**

OAIC (Office Algérien Interprofessionnel des Céréales)  
5, Rue Ferhat Bousand  
Algiers, Algeria  
Tel. 66.28.32/35  
Cables: OAIC ALGER  
Telex: 52798, 52121, 52122, 52123

ONAFEX (Office National des Foires et Expositions)  
Palais des Expositions  
Pins Maritimes, B.P. 656  
Algiers, Algeria  
Tel. 76.31.00/04, 76.39.70/74  
Cables: ONAFEX ALGER  
Telex: 54061

SOGEDIA (Société de Gestion et de Développement des Industries Alimentaires)  
13, Avenue Claude Debussy, B.P. 73  
Algiers, Algeria  
Tel. 64.38.01  
Cables: SOALCO ALGER  
Telex: 52837, 52316, 52739

ONACO (Office National Algérien de Commercialisation)  
29, Rue Larbi Ben M'Hidi  
Algiers, Algeria  
Tel. 64.02.75/77  
Cables: ONACO ALGER  
Telex: 52882, 52991, 52992

SN SEMPAC (Société Nationale de Semouleries, Meuneries, Fabriques de Pâtes Alimentaires et Couscous)  
6, Boulevard Airout Youcef, B.P. 17  
Algiers, Algeria  
Tel. 63.92.97/99  
Cables: DCSEMPAC ALGER  
Telex: 52923, 52907

ONAB (Office National des Aliments du Bétail)  
4, Chemin de Kouba  
Algiers, Algeria  
Tel. 58.41.23/24, 58.47.64, 58.47.16, 58.75.35  
Cables: ONAB ALGER  
Telex: 54135

SNTA (Société Nationale des Tabacs et Alumettes)  
40, Rue Hocine Nourredine, Belcourt  
Algiers, Algeria  
Tel. 66.33.95  
Cables: SNTABAC ALGER  
Telex: 52780

ONALAIT (Office National de Lait et des Produits Laitiers)  
1, Place Carnot, Hussein-Dey  
Algiers, Algeria  
Tel. 77.01.67  
Cables: ONAL ALGER  
Telex: 52550

OFLA (Office des Fruits et Légumes d'Algérie)  
12, Rue des Trois Frères Bouadou, Birmandreis  
Algiers, Algeria  
Tel. 56.01.22  
Cables: OFLA ALGER  
Telex: 52823

SNNGA (Société Nationale Les Nouvelles Galéries Algériennes)  
67, Rue Larbi Tebessi, Belcourt  
Algiers, Algeria  
Tel. 66.29.63  
Cables: SNGA ALGER  
Telex: 52776

SONIPEC (Société Nationale des Peaux et Cuirs)  
100, Rue de Tripli, Hussein-Dey  
Algiers, Algeria  
Tel. 77.65.00  
Cables: TAL ALGER  
Telex: 52832, 52068

American Embassy  
4, Chemin Cheikh Bachir, Brahimi  
Algiers, Algeria  
Tel. 60.14.25  
Telex: 52064

USDA Trade Office  
c/o American Embassy  
144, Avenue de la Liberté  
Tunis, Tunisia

Embassy of Algeria  
2118 Kalorama Road, N.W.  
Washington, D.C. 20008  
Tel. (202) 234-7246

**Saudi Arabia**

Ministry of Commerce  
Airport Road  
Riyadh, Saudi Arabia  
Telex: 201057 Tijaran SJ

U.S. Embassy  
Palestine Road  
P.O. Box 149  
Jiddah, Saudi Arabia  
Telex: 401459 Amamb SJ  
Mailing Address:  
American Embassy Jiddah  
APO New York, N.Y. 09697

U.S. Liaison Office  
P.O. Box 7442  
Riyadh, Saudi Arabia  
Telex: 201363 USRiad SJ  
Mailing Address:  
USLO Riyadh  
APO New York, N.Y. 09038

Saudi Arabian Embassy  
1520 18th Street, N.W.  
Washington, D.C. 20036  
Tel. (202) 483-2100

## **Kuwait**

Kuwait Chamber of Commerce and Industry  
P.O. Box 775  
Safat, Kuwait  
Telex: 2198

Kuwait Supply Company  
P.O. Box 5932  
Kuwait, Kuwait  
Tel. 813832  
Telex: 2311 KT

Union of Cooperatives  
P.O. Box 1836  
Safat, Kuwait  
Tel. 452219, 4552209

American Embassy  
P.O. Box 77  
Kuwait, Kuwait

Embassy of Kuwait  
2940 Tilden Street, N.W.  
Washington, D.C. 20008  
Tel. (202) 966-0702

## **Iraq**

State Organization for Food Industries  
Sara Khartoon Camp  
P.O. Box 2301  
Baghdad, Iraq  
Cable: Storindust Baghdad

Iraqi Fairs Administration  
Baghdad, Iraq  
Telex: 2231 Tamra IK

U.S. Interests Section  
P.O. Box 2447  
Alwajah, Baghdad, Iraq  
Telex: 2287 US INT K

Iraqi Interests Section  
Indian Embassy  
1801 P Street, N.W.  
Washington, D.C. 20008  
Tel. (202) 483-7500



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# Japan to Increase Imports of U.S. Grains and Meats



*"I am impressed with the quality and thoroughness of this work. It represents a real contribution to our understanding of Japanese agriculture."*

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Japan has long been one of the most important markets for U.S. agricultural exports, especially grains and oilseeds. A new report by USDA's Economic Research Service, *Japan's Feed-Livestock Economy: Prospects for the 1980's*, helps explain why that has been so and why future farm exports to Japan will probably rise even higher.

Each year, Japan purchases about 20 percent of total U.S. corn exports, 50 percent of U.S. sorghum exports, and more than 20 percent of U.S. soybean exports. By 1990, the United States may be able to increase its grain and soybean exports by a third and quintuple its beef exports, according to William Coyle, author of the report. In contrast,

the Japanese market for imported dairy products, pork, and poultry will show little or no growth. The United States provides more than 65 percent of Japan's imports of coarse grains (corn, barley, sorghum), 95 percent of its soybean imports, and 71 percent of its soybean meal imports.

The report includes extensive tables and charts on Japanese consumption, production, and trade of beef, dairy, poultry, fish, and feed grains. It also includes two sets of consumption projections through 1990 for each commodity, one projection by the Japanese government and one by ERS.

See box below for ordering information.

## Ag Subsidies Pressure EC Budget

*Japan's Feed-Livestock Economy: Prospects for the 1980's*; \$5.00; 80 pages; GPO stock no. 001-000-04316-1.

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The European Community may have to reduce its agricultural support programs and export subsidies in order to avert a budget crisis, according to a report by USDA's Economic Research Service. Those reductions ought to make U.S. exports more competitive.

*Developments in the Common Agricultural Policy of the European Community* examines how the EC's farm program (CAP) may evolve, indicates potential price levels in various European countries, and assesses the implications for trade with the U.S. and other countries.

Sweden, although not a member of the EC, is also reducing its farm programs and farm expenditures. *Sweden's Agricultural Policy*, also published by ERS, is the only report available in English to describe recent changes in Sweden's agricultural policies and programs, including the major provisions of Sweden's 1982-84 farm program.

Two of the major changes dealt with in the report are Sweden's reduced government subsidies for agricultural exports (a major aim of U.S. world trade policy) and its changes in import levies for beef and pork.



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